

AMERICAN JOURNAL OF OPHTHALMOLOGY

Vol. 10

MARCH, 1927

No. 3

SOCALLED CYSTIC DEGENERATION IN THE PERIPHERAL RETINA.

SADAMI OCHI, M.D.

SAPPORO, JAPAN.

This condition is found most frequently in the eyes of elderly people; but sometimes is observed in the eyes of children. The author examined histologically the eyes of fifteen children, aged from birth to four years and seven months. No evidence of original degeneration was found in neighboring cells. It is pointed out that the peripheral retina, closely connected to the vitreous body and influenced by contraction of the ciliary muscle, is liable to lymph congestion which might lead to degenerative changes.

At what age does the socalled cystic degeneration take place in the peripheral part of the retina? It is often found in small spots, scattered about the ora serrata in the peripheral part of the retina, altho it is invisible to the ordinary ophthalmoscopic examination. These spots present various forms, round, oval and other shapes. These are the morphologic changes which are to be found, even in eyes which have never contracted disease.

As a rule, the retina gradually loses its transparent nature, in due time after death, or when the eyeball is enucleated. These degenerated small spots will be seen as dark in color upon the surface of the opaque retina. Thus this degeneration has been taken into consideration by research workers in earlier days.

Iwanoff¹ describes this degeneration as edema of the retina. However, Netleship² has insisted that undoubtedly it should be called "cystic disease of the retina" rather than edema. The word "cystic," herewith used in my title, is based on his view. In the most of German medical books the nomenclature cystoid degeneration or "Cystoide Entartung" is commonly used.

With regard to the above mentioned degeneration Bleschig,³ one of the oldest recorders, regarded it as a normal condition of the retina, but Iwanoff considered it as a morbid condition.

According to the research of Iwanoff, it was impossible to find a single

example of cystic degeneration among twenty eyeballs taken from children up to eight years old, yet he is convinced that he found six examples of this degeneration among fifty eyeballs of adults, age twenty to forty years, and twenty-six examples out of forty-eight eyes taken from aged people, fifty to eighty years. This shows that the majority of aged people suffer from this degeneration.

In giving an explanation as to the cause of this degeneration Greeff⁴ concluded that it is due to the fact that the blood circulation of aged people is prevented from going fully to the peripheral part of the retina, by reason of a general weakening of the heart function. However, he accidentally found this degeneration in the eye of a child six years old. The child was troubled with epibulbar cancer of the eyeball, as well as xeroderma pigmentosum. Therefore he suggested the possibility of the occurrence of this degeneration even in the case of children, providing there was any disturbance in the circulation of the eyeball. Salzmann⁵ also recognized the same fact, namely that this degeneration occurs in aged people; but he inferred that the beginning of this cystic degeneration might be seen at a very early age, likely between sixteen and twenty years of age.

I admit that the cystic degeneration in the peripheral part of the retina may grow more marked with age, and have tried to determine at what age this degeneration takes place. To this end I obtained the following result after

making many examinations from specimens which happened to be at hand.

I made an incision in the upper or lower wall, as required, of eyeballs taken from the following subjects: three new born babies, one twenty-two days old, one fifty-five days old, one three months, six days old, one six months and half old, one seven months and half old, one eight months old, one nine months old, one a year and three months old, one a year, four months old, one a year, eight months old, one a year, ten months old, one two years, five months old, one two years, seven months old, one three years, eight months old (female), one four years, six months old (female), and one four

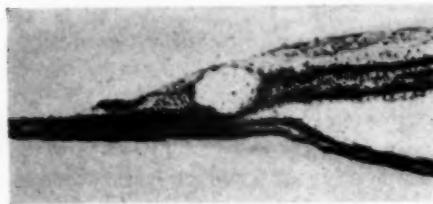


Fig. 1.—Cystic degeneration in peripheral retina of a girl of 3 years and 8 months.

years, seven months old (female). A thorogoint inspection was made of the whole of the peripheral part of the retina by magnifying glass or microscope.

After examining these eyes, as to whether there was any cystic degeneration, I examined the celloidin sections of the peripheral part of the retina prepared for histologic purposes. As a result of this examination, I perceived an initial form of cystic degeneration in the peripheral part of the retina of eyes taken from among the last three children. Among these, a girl of three years, eight months (Fig. 1), had died after forty hours, from autointoxication; a boy of four years, six months (Fig. 2) died after the lapse of two months from tuberculous meningitis, together with serous pleurisy of the left side; and the last, a girl of four years, seven months (Fig. 3), was carried off by dysentery, twenty-two days after she was attacked. In all these cases there was nothing which indicated any form of eye disease.

From what has been said above, it will be seen that the socalled cystic degeneration in the peripheral part of

the retina, which has been considered as only common among aged people, is also found in children of four years old or thereabouts who never suffered with special eye disease; one of them died within forty hours after having been attacked. Therefore it is impossible to reconcile the theory of impairment of the circulation of the eyeball as above mentioned.

Needless to say that we can often observe the cystic degeneration in the peripheral part of the retina among people of ten, twenty and thirty years of age, where there is no heart disease noted in postmortem examination, and where no special eye disease is concerned. In such cases the theory of the cardiac weakness, proposed by Greeff, can hardly be substantiated.

As to the formation of cystic degeneration in the retina, a theory of shrinkage of cells is advocated by Kuhnt,⁶ Landberg,⁷ and Oguchi.⁸ This is due to the growth of a cavity in the retina by the shrinkage of cells. And the same theory has been applied to account for the formation of cystic degeneration in the peripheral part of the retina.

If the shrinkage of cells is the main reason, we ought to be able to recognize, in the course of our examination of the specimen taken from the peripheral part of the retina, the various processes which lead to the shrinkage of cells there. Nevertheless as yet I have no sufficient evidence in regard to this point. Sometimes we observe a few metamorphic cells, emigrating on the part affected by cystic degeneration in the peripheral part of the retina, without having any special inflammation. Even in this case I cannot admit that the cystic degeneration was caused by such metamorphic cells, but rather regard it as the result of subsequent phenomena in the formation of cystic degeneration, or some other cause.

While seeking an explanation for the formation of the cystic degeneration in the peripheral part of the retina, a striking fact carried me back to my experiment. When I made the experiment in the staining of the neuroglia fibers in the retina, I obtained a comparatively good result by means of Mallory's method at the beginning. Never-

theless in the peripheral part of the retina, in comparison with other parts, Müller's fibers were not well colored with stain, more than 0.5 to 1.5 mm. or 2.0 mm. in extent from the ora serrata. I tried this in various ways, and supposed that it was due to the fact that the corpus vitreum adheres fairly well to a certain surface of the retina near to the ora serrata. For this reason it is rather hard to get solutions into the tissue of the retina in the aforesaid part, with the fixing medium or mordant. Consequently it results in the tissue of the peripheral part of the retina being colored unevenly.

On the whole, the peripheral part of the retina should be reckoned as a

place on which a cystic form appears. I suppose, it is by reason of the corpus vitreum being adherent to the environs of the ora serrata, that there should exist any alteration of lymph between them. Thus it should be possible to force the lymph to stagnate in the peripheral part of the retina. Then the cystic degenerations might gradually increase in size and number with age.

This is my explanation for the growth of cystic degeneration in the peripheral part of the retina. The result of detailed histologic examination of the regions affected by cystic degeneration, by using various methods of staining, gives no reason to admit, that



Fig. 2.—Cystic degeneration in retina of boy of 4 years and 6 months.

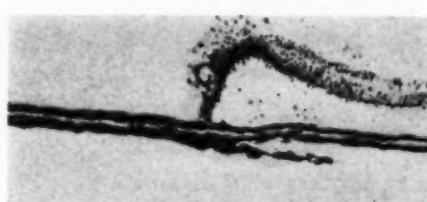


Fig. 3.—Cystic degeneration in retina of girl of 4 years and 7 months.

place where many changes take place unexpectedly. My report on the linear atrophy in the peripheral part of the retina⁹ is indicative of this fact. This portion of the retina seems to be easily influenced by the adjoining parts, or from other causes. The peripheral part of the retina, on the one hand, is closely connected with the corpus vitreum, as mentioned above, and on the other hand it is located in a place where it might be influenced by the contraction of the ciliary muscles or the strain of the zonula of Zinn. Thus, naturally, the histologic changes might easily take place there. And if the lymph is congested in the peripheral part of the retina, it will become also stagnant in the tissue of the retina where the lymph is relatively at ease between tissue elements. Then there

the wall forms a space which consists of the connective tissue, as reported by Greeff. It is, however, to be considered as a mechanically enlarged space, between the tissue elements of the retina, where there is no special wall. It is of course expected that secondary changes might result from this enlargement.

The form of old cystic degeneration is considerably complicated in shape, yet I found initial forms, simple in their construction, as stated above, in the eyes of children about the age of four years. The reason I adopted the above mentioned explanation as to the formation of the cystic degeneration in the peripheral part of the retina, is entirely due to my histologic study made on such simple cases.

Imperial University.

BIBLIOGRAPHY.

1. Iwanoff. Arch. f. Ophth., vol. XV, Ht. 2.
2. Nettleship. Roy. London Ophth. Rep., vol. VII, part. 3.
3. Bleschig. Inaug. Diss. Dorpat, 1855.
4. Greeff. Arch. f. Augenh., vol. XL, p. 99.
5. Salzmann. Die Anat. u. Hist. d. menschl. Augapfels.
6. Kuhnt. Vers. O. G. Heidelberg, 1881.
7. Landberg. Arch. f. Ophth., vol. XXIII, Ht. 1. Grundriss d. path. Hist. d. Auges.
8. Oguchi. Arch. f. Ophth., vol. LXXX, Ht. 3.
9. Ochi. Nippon Gank. Zasshi, vol. XXI, p. 6.

BILATERAL HEMORRHAGIC DETACHMENT OF RETINA IN THE NEW BORN, SIMULATING GLIOMA.

GEORGE S. LACHMAN, M.D.

BALTIMORE, MD.

A case is reported in which the eyeballs enucleated at three and one-half months for supposed retinoblastoma were found to have the retina detached from the choroid by a mass of blood serum; but with no evidence of tumor formation. Several cases of similar character have been previously reported. Contributed from the Pathological Department of the Wilmer Ophthalmological Institute, Johns Hopkins Hospital.

A small number of cases have been reported in the literature in which the pathologic examination of eyes enucleated under the diagnosis of glioma of the retina has revealed only a simple retinal detachment. Leber¹ cites three such cases and Sattler² in his newly published book, "Die bösartige Geschwülste des Auges," mentions three others. To these may be added the report of Fernandez³ of two cases of retinal detachment in infant brothers and the report of Clarke⁴ of two infants, brother and sister, each with unilateral detachment of the retina simulating glioma.

Stoewer⁵ reports the case of a child of three months presenting the clinical picture of unilateral glioma of the retina. On pathologic examination the retina was found to be detached, matted together, partially necrotic and overlying a large fresh hemorrhage. Stoewer attributed the condition to trauma tho no definite corroborative history was obtained. W. C. Rockliffe⁶ reports a similar case in which small retinal hemorrhages were found. It will be seen that the case about to be reported, tho belonging to this small group, is in some respects unique.

REPORT OF CASE.

A. C. S., a white male infant aged 3½ months, was admitted to the Johns Hopkins Hospital on September 18, 1924, on account of trouble with his eyes. The clinical history, obtained from the parents was as follows: Family history: negative. Past history: The child was the result of the mother's single pregnancy. Delivery was by low forceps but labor was not at all difficult (corroborated by the ob-

stetrician). Development was normal. The mother stated that the child had frequent attacks of sudden screaming and that it moved its head from side to side a great deal.

Present illness: A few weeks after birth the parents noted that the child's eyes did not seem normal.

Physical examination: The child was examined independently by three ophthalmologists who concurred in the diagnosis of bilateral glioma of the retina and in the following findings: Both eyeballs were enlarged and showed increased intraocular tension. Corneas clear, no deposits on their posterior surfaces, no turbidity of the aqueous. Pupils dilated ad maximum, one small synechia at the lower margin of the right pupil. Lenses normal. Both eyes showed a brownish or purplish yellow mass behind the lens, flecked with hemorrhages but not showing any definite vascularization. Bilateral enucleation was performed. No extrabulbar tumor nodules were found at operation.

PATHOLOGIC EXAMINATION: Both eyes were somewhat enlarged, measuring 20 mm. in diameter. Externally nothing abnormal was found. A suture had been inserted at the limbus in each eye during the enucleation. The eyeballs were fixed in Bouin solution and bisected equatorially. In each eye the retina was found to be detached and matted together in a funnel shaped mass. Beneath each retina was a large amount of bloody serum. The eyes were embedded in paraffin and sectioned and stained in the usual manner. Both eyes presented essentially the same microscopic picture. Only one, therefore, will be described.

The sections showed the cornea to be entirely normal. There was serum in the anterior chamber and fresh hemorrhages in the iris and ciliary body and posterior chamber (operative suture?). There were incomplete, but organized, peripheral anterior synechiae. The iris showed an extreme degree of shrinkage resulting in an excessively large pupil. Its free anterior surface

cataract. The ciliary body showed old as well as fresh hemorrhages. There was a dense organizing cyclitic membrane extending all the way across the globe behind the lens, in part quite fibrous, in part vascular and densely infiltrated with mononuclear and polymorphonuclear leucocytes. There were extensive old choroidal and subchoroidal hemorrhages. The choroidal



Fig. 1.—Angle of anterior chamber showing a peripheral anterior synechia, ectropion uveae and serum in anterior and posterior chambers.

was almost entirely covered by an outward extension of the pigment epithelium—so-called ectropion uveae. Beneath this ectopic pigmented layer and separating it from the iris stroma was a thin fibrinous coagulum, probably associated with the fresh (operative) hemorrhage.

The lens was of normal size. Its subcapsular epithelium, however, instead of stopping as it normally should just behind the equator, extended around almost to the posterior pole, and there was nowhere any evidence of new lens fiber formation. At the posterior pole was a small subcapsular

blood vessels were markedly engorged and showed some perivasculär infiltration. Here, as elsewhere when old hemorrhages have been noted, red blood cells were seen in various stages of disintegration together with numerous large mononuclear phagocytic cells laden with blood pigment.

The retina which was completely detached and matted together was separated from the choroid by a large mass of blood and serum. This hemorrhagic mass was evidently fairly old for it showed not only disintegration and phagocytosis of the red cells but also beginning organization. The ret-

ina itself was much altered by fresh and old hemorrhages some of which show extensive evidences of organization, so that in many places its various layers were no longer recognizable. There was, however, no evidence of tumor formation. There was partial atrophy of the optic nerve.

Discussion. Retinal hemorrhages in infants have long been a subject of

sermann reactions were made routinely, but in no case showing retinal hemorrhages was the reaction positive. Systematic pathologic examinations of the eyes of infants stillborn, or dying in the first three days after birth, have been made by Naumhoff and by Coburn (quoted by Jacobs). The former found pathologic changes in 25%, the majority of these being

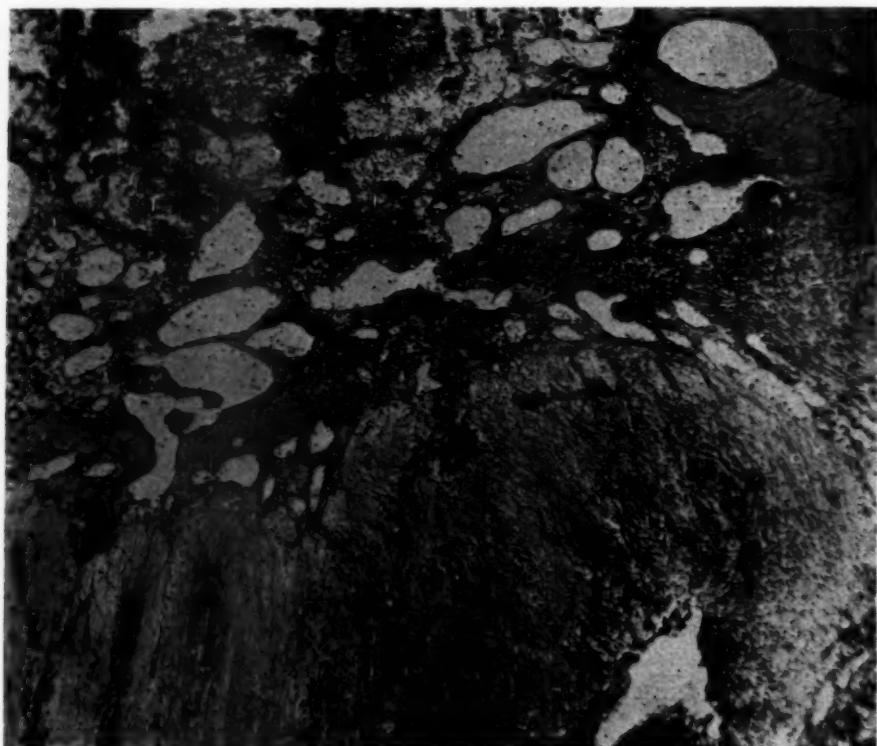


Fig. 2.—Organizing hemorrhage and a fold of the detached retina R.

much interest. A number of investigators have tried to correlate the presence of these hemorrhages with certain features of difficult labor. The matter was first studied by Jaeger in 1861 (quoted by Jacobs). Ehrenfest⁸ lays considerable emphasis on this association. Paul, and later Stumpf and Sicherer⁹ made routine ophthalmoscopic examinations in new born infants. The former reported 34.5%, the latter 32% retinal hemorrhages of varying size. Jacobs¹⁰ examined a series of 190 new born infants and found retinal hemorrhages in 23. Was-

hemorrhages; the latter reports retinal hemorrhages in 41% of the cases examined. In none of these recent series has a definite relation between retinal hemorrhages and birth injury been conclusively proven.

In this laboratory the eyes of 73 infants, stillborn or dying within a few days after birth, have been examined histologically. In 5 of these retinal hemorrhages, in 6 choroidal hemorrhages, and in 2 others both retinal and choroidal hemorrhages were found. It is well to call attention here to the relatively large number of cases show-

ing choroidal hemorrhages; for the frequent occurrence of this lesion has not heretofore been suspected. Indeed Metzger¹⁶ has recently published the results of a rather elaborate experimental research in which, by subjecting new born puppies to certain violent manipulations, he was able to produce retinal hemorrhages and a condition resembling *caput succedaneum*. The absence of choroidal hemorrhages in these puppies lead him to believe, that the retinal hemorrhages of the

new born are caused by a similar injury.

In view of the frequency of small retinal and choroidal hemorrhages in the new born, it seems rather extraordinary that massive hemorrhages such as we have reported should be so rare. That the hemorrhages dated from birth in our case is strongly suggested both by the history and by the microscopic findings.

905 Chauncey Ave.

BIBLIOGRAPHY.

1. Leber. Gr.-Saem. Handb. der Augenheilkunde, vol. VII, T 11, part 2, p. 1453.
2. Sattler. Bösartigen Geschwülste des Auges, 1926.
3. Stoewer. Arch. of Oph., 1907, vol. XXXVI, p. 824.
4. Rockliffe. Trans. of the Oph. Soc. United Kingdom, 1898, vol. XVIII, p. 139.
5. Fernandez. Rev. Cubana de Ophthalmology, 1920, vol. VII, pp. 30-34.
6. Clarke. Trans. Oph. Soc. United Kingdom, 1898, vol. XVIII, p. 136.
7. Mayou. Trans. Oph. Soc. United Kingdom, 1915, vol. XXXV, p. 118.
8. Ehrenfest. Birth Injuries of the Child, 1922.
9. Stumpf and Sicherer. Beitr. z. Geburtsh. und Gynak., 1909, vol. XIII, p. 408.
10. Jacobs. J. A. M. A., 1924, vol. LXXXIII, p. 1641.
11. Raab. von Graefe's Arch., vol. XXIV, p. 163.
12. Allin. Trans. American Oph. Soc., 1870, vol. VII, p. 70.
13. Collins. Roy. London Oph. Hosp. Reports, 1892, vol. VIII, p. 361.
14. Vasseaux. Arch. d'Opht., 1883, vol. III, p. 502.
15. Parsons. Pathology of the Eye, 1904.
16. Metzger. Deutsch. med. Woch., 1925, vol. LI, p. 1446.

SIGNIFICANCE OF LATENT OCULAR MUSCLE IMBALANCE.

WALTER H. FINK, M.D.

MINNEAPOLIS, MINN.

Patients apparently free from eyestrain, high ametropia and notable muscular imbalance, were carefully tested as to muscle balance. One eye was covered for ten days and then the muscle balance was retested. All but three gave evidence of latent muscle imbalance. This may suggest that many deviations found by such tests should not be looked on as pathologic. Thesis for Master's degree in Ophthalmology in Graduate School of Medicine, University of Pennsylvania.

The significance of latent muscle imbalance is a question which as yet has not been fully decided. There are those who are fully convinced that it is of great importance; there is also a group directly opposed to this view. It has been but a few years that the question has been given any consideration and the data at hand are insufficient to enable one to view the problem fairly from both angles. It is not the object of this paper to endeavor to disprove or to criticize work done by others, but to view the question from another angle, and in so doing, it is hoped that something can be added which may aid in the settling of it.

It is a striking fact that work done on this subject has been done on cases which showed some evidence of ocular strain. There has been no record made of the tests being carried out on eyes free from symptoms. If eyes free from symptoms show a muscle imbalance of any note when covered, and eyes having symptoms of strain show similar deviation under the same condition, it is only fair to conclude that too much significance should not be ascribed to the imbalance. That certain cases have imbalances which cause symptoms is without question. But because a case has an imbalance brought out by the cover test, all symptoms of strain should not be attributed to it as a cause, because it is in many cases a physiologic condition.

To prove that some eyes have latent imbalances which are purely physiologic, it is necessary to select cases that are free from all symptoms of eyestrain, practically emmetropia, orthophoria, or very slight muscle imbalances, and normal visual acuity. To obtain cases answering these conditions which will submit to the test is

almost impossible, because very few people care to be inconvenienced for a period of ten days, unless they see some reason for it. Because of this, it was necessary to select cases from the next best source, namely, cases which showed a slight refraction error and muscle imbalance, but were free from eyestrain. They came to the hospital because of a slight injury to the lid, tumor of the lid, or some condition not related to eyestrain.

After much elimination 35 cases were selected. Of these 5 came because of laceration of the lid, or near it; 3 came because of pinguecula; 10 because of pterygium; 3 for dermoid cysts; and 14 because of chalazion. It was necessary to select cases of this nature because in the treatment of their condition, the eye could be covered for the period of ten days, without objection on the part of the patient.

TECHNIC. The case was carefully examined and if he was of average intelligence, was free from symptoms of eyestrain, had only a slight muscle imbalance and refraction error, and normal visual acuity, one eye was covered with gauze fastened in place with adhesive; and it was uncovered when the full correction was in place and the Maddox rod before one eye, so that at no time during the entire period was there binocular vision.

The muscle balance was taken at the end of 3, 7 and 10 days. The eyes were not covered longer, because it was impossible to get the cooperation of the patient; and because this period was sufficient to bring out the major portion of the error, if present. The correction was not worn during this period because the error was so slight that ordering glasses would not have been justified.

The following table indicates the age, occupation, complaint, correcting lenses required; and the muscle balance, before and after ten days cover-

ing of one eye. The amount of heterophoria is indicated in prism degrees, that is the refracting angle of the prism required to correct it.

TABLE OF CASES. IMBALANCE IN PRISM DEGREES.

Age	Occupation	Complaint	Correction	Before 6 m.	Covering 33 cm.	After 6 m.	10 Days 33 cm.
28	Student	Pinguecula	0.37 \supset 0.25ax90° 0.50 \supset 0.25ax90°		4 eso.		4 exo.
34	Housework	Laceration of face	0.37x90° 0.37x90°	1 eso.	5 exo.	2 L. H. 1 exo.	2 L. H. exo.
..	Housework	Chalazion	0.75 0.37	2 eso.	4 exo.	1 R. H. 2 exo.	1 R. H. 6 exo.
38	Clerk	Chalazion	0.50 0.25x90° 0.50	5 exo.	1 eso.	1 R. H. 2 exo.	1/2 R. H. 12 exo.
34	Laborer	Pterygium	0.75 0.50 0.25x90°	6 exo.	1 eso.	1 R. H. 2 ex.	1 R. H. 14 ex.
22	Clerk	Chalazion	—0.50 —0.50	2 exo.	1 eso.	3 L. H. —2 ex.	4 L. H. 4 ex.
34	Housework	Laceration of lid	0.37 0.25		1/2 L. H.—5 ex. 1/2 L. H.—1 ex.—5 ex.	3 L. H. —5 ex.	4 L. H. 20 ex.
28	Maid	Chalazion	0.25x90° 0.50	1 eso.	4 exo.	3 1/2 L. H. 4 ex.	4 L. H. 12 ex.
40	Cook	Pterygium	0.50 \supset 0.25ax90° 0.50 \supset 0.25ax90°	0	0	3 R. H. 1 ex.	2 1/2 R. H. 12 ex.
32	Laborer	Chalazion	0.50 0.25 \supset 0.25x90°	1 1/2 eso.	0	1 R. H. 1 ex.	1 1/2 R. H. 12 ex.
32	Trainman	Chalazion	0.50 0.50	1 1/2 eso.	1 exo.	1 L. H. 4 ex.	1 1/2 L. H. 9 ex.
24	Student	Chalazion	0	0	4 exo.	2 R. H. 1 eso.	3 R. H. 5 ex.
18	Housework	Chalazion	0.75 0.75	2 exo.	6 exo.	1 L. H. 2 ex.	1 1/2 L. H. 14 ex.
60	Housework	Pterygium	0.50 0.25 \supset 0.25ax90°	1/2 eso.	5 exo.	2 L. H. 4 ex.	2 L. H. 8 ex.
26	Stenog.	Laceration of lid	0.25 \supset 0.25x15° 0.50	1 eso.	2 exo.	2 1/2 L. H. 3 ex.	2 1/2 L. H. 14 ex.
33	Clerk	Dermoid	0.37 \supset 0.25x90° 0.25 \supset 0.25x90°	3/4 eso.	6 exo.	2 1/2 L. H. 8 ex.	3 L. H. 16 ex.
24	Housework	Chalazion	0.25 0.25		1/2 L. H. 4 exo.	1 L. H. 2 ex.	1 L. H. 10 ex.
38	Laborer	Laceration of lid	0.50 0.37		Orthophoria	1 L. H. 5 exo.	1 1/2 L. H. 12 exo.
30	Stenog.	Pinguecula	0.25 0.25ax75°			2 L. H. 4 exo.	2 L. H. 12 exo.
24	Housework	Pterygium	0.37 0.25 \supset 0.25ax90°	2 eso.	4 exo.	2 L. H. 4 exo.	2 L. H. 12 exo.
36	Laborer	Chalazion	0.50 0.50			1 L. H. 3 exo.	2 L. H. 8 exo.
31	Clerk	Pterygium	0.25 \supset 0.25ax75° 0.25 \supset 0.25ax105°	3 eso.	3 exo.	1 1/2 L. H. 1 exo.	2 L. H. 8 exo.
47	Housework	Pterygium	—0.50 —0.25 \supset 0.25x15°		Orthophoria	1 R. H. 2 exo.	1 1/2 R. H. 9 exo.
20	Laborer	Pterygium	0.25 \supset 0.25ax90° 0.25 \supset 0.25ax90°		Orthophoria	1 L. H. 2 exo.	1 1/2 L. H. 9 exo.
33	Clerk	Pterygium	0.50 0.50	3/4 exo.	6 exo.	1 R. H. 2 exo.	1 R. H. 13 exo.
38	Laborer	Laceration of lid	0.25 0.25		1/2 L. H. 2 eso. 3 exo.	1 1/2 L. H. 1 exo. 5 exo.	2 L. H. 5 exo.
41	Driver	Pinguecula	0.25 \supset 0.25x45° 0.25 \supset 0.25x135°			2 L. H. 3 exo.	2 L. H. 9 exo.
15	Student	Dermoid	—0.50 \supset 0.25x180° —0.37 \supset 0.25x180°	1 exo.	6 exo.	2 L. H. 9 exo.	2 L. H. 12 exo.
18	Maid	Chalazion	No correction	1 eso.	1 1/2 exo.	2 L. H. 2 exo.	2 L. H. 4 exo.
36	Housework	Dermoid	0.37ax90° 0.25	1 exo.	5 exo.	3 R. H. 3 exo.	3 R. H. 12 exo.
46	Driver	Pterygium	0.25 \supset 0.25ax75° 0.25	2 eso.	2 exo.	3/4 R. H. 3 exo.	3 exo.
36	Clerk	Chalazion	0.75 0.37			7 L. H. 1 eso.	7 L. H. 2 exo.
33	Stenog.	Chalazion	0.50 0.75			1 R. H. 1 eso.	1 1/2 R. H. 3 exo.
38	Laborer	Pterygium	0.50ax90°	2 eso.	3 exo.	1 R. H. 1 eso.	1 R. H. 3 exo.
30	Housework	Chalazion	0.50 \supset 0.25ax90° 0.50	1 1/2 eso.		3 R. H. 5 exo.	3 R. H. 8 exo.

The above table shows that the covering of one eye brought out a change in the muscle balance. The variation being so great it is impossible to give a definite average. To get a clearer idea of the changes that took place, they may be grouped into four groups. The figures indicate prism degrees, that is degrees refracting angle of prism making an equivalent change of direction.

1. Vertical change at 6 meters.

Cases.

- 15 showed from 1 to 2
- 10 showed from 2 to 3
- 5 showed from 3 to 4
- 2 showed $\frac{1}{2}$
- 1 showed 7
- 1 showed no change

2. Vertical change at 33 cm.

Cases.

- 12 showed 2 to 3
- 12 showed 1 to 2
- 5 showed 3 to 4
- 2 showed 4
- 2 showed no change
- 1 showed 7

3. Horizontal change at 6 m.

Cases.

- 7 showed 1 to 2
- 7 showed 3 to 4
- 6 showed 4 to 5
- 4 showed 2 to 3
- 3 showed 5 to 6
- 2 showed no change
- 2 showed 6 to 7
- 1 showed $7\frac{1}{2}$
- 1 showed 8
- 1 showed 9

4. Horizontal change at 33 cm.

Cases.

- 8 showed between 8 and 9
- 5 showed 1
- 4 showed between 2 to 3
- 3 showed 3 to 4
- 3 showed 5 to 6
- 3 showed 6 to 7
- 3 showed 7 to 8
- 2 showed 10
- 2 showed no change
- 1 showed 15
- 1 showed 1

Of 35 cases examined, three showed no change in the muscle balance. One case showed only an increase in exophoria at 33 cm. There did not seem to be any relation between the change in hyperphoria and the exophoria. Some cases with a marked degree of hyperphoria showed a low degree of exophoria, and vice-versa.

CONCLUSIONS. It is evident that a latent muscle imbalance can be present in eyes which are free from symptoms of eyestrain, and for practical purposes are normal in other respects.

That it is present in the great majority of cases is shown by the fact that out of 35 cases examined, 32 showed a latent muscle imbalance.

It is impossible, because of the small number of cases examined, to make a statement as to the real significance of the imbalances uncovered in eyes free from symptoms, but it at least suggests the possibility that many deviations uncovered should not be looked upon as pathologic.

426 *La Salle Bldg.*

CHORIORETINITIS AND RECURRENT HEMORRHAGES INTO RETINA AND VITREOUS FROM MULTIPLE FOCAL INFECTION.

DEAN E. GODWIN, M.D.

LONG BEACH, CALIFORNIA.

A man, aged 29, had suffered eight years before with chorioretinitis and hemorrhage. Later uveitis clearing up after extraction of infected teeth; chorioretinitis and hemorrhage after acute tonsillitis; repeated hemorrhages that ceased after a partial sinus operation and strabismus that subsided spontaneously. Read before Eye and Ear Section Los Angeles County Medical Society, October 4, 1926.

Nontraumatic recurrent hemorrhage into the retina and vitreous in adolescence, has long been regarded as a clinical entity. Finnoff¹ criticizes this terminology and suggests the name "Recurrent Hemorrhages in Young Persons"; as many of the reported cases are beyond the adolescent age, and this term is used to exclude the cases in elderly people that could be considered as due to atheromatous conditions of the retinal arteries. If the underlying pathologic conditions be studied, however, it might justly be questioned whether any age limit should be set; or whether on the other hand, all cases regardless of age may be of similar etiology, and simply variations of the same pathologic process.

A rather careful search of the literature on this subject for the past ten years shows a somewhat limited number of reported cases that have been studied from the standpoint of etiology. The theories of causation of recurrent hemorrhages are various. Practically all authorities mention that the cases are most frequent in males, that they are associated with epistaxis and constipation, and most conclude that the largest number are of tuberculous origin. Other causes given include anomalies of the blood (leucemia, anemia and hemophilia), gout, diabetes, syphilis, malaria, hyperthyroidism and other endocrin conditions, vicarious menstruation, and vicarious epistaxis. A few authors mention focal infection as a possible or, in some cases, a demonstrated cause.

Three standard text books of ophthalmology (de Schweinitz,² Ball,³ Fuchs-Duane⁴), do not list focal infection among the causes; tho the

latter, under treatment, mentions that "any remote source of infection should be sought for and removed." De Schweinitz,⁵ writing in the Therapeutic Gazette, suggests that the elimination of infected and diseased areas is a perfectly proper treatment, whether they be demonstrated as etiologic factors, or not. The article on this subject in the American Encyclopedia of Ophthalmology⁶ does not include focal infections among the causes, but quotes Noll's classification which lists "sepsis" as among others causing local vascular changes.

Finnoff,⁷ in 1921, summarized 110 cases in the literature including five of his own. Two of the latter were considered as due to focal infection. He derives the conclusions that tuberculosis of the vessels, especially the veins, is one of the etiologic factors, lues is an occasional, and focal infection a possible cause.

Harbridge⁸ states that "undoubtedly a modest percentage of cases are due to focal infection." Franchere,⁹ writing from the standpoint of dental pathology, mentions retinal hemorrhages among the direct effects of apical abscesses. Woods,¹⁰ Radcliffe,¹¹ Appleman¹² and Tenner¹³ each report one case of hemorrhage due to dental infection, and Lewis¹⁴ reports two cases with pyorrhea, one of which also had maxillary sinusitis. Cullom¹⁵ and Looper¹⁶ each report one case of hemorrhage that absorbed completely with a restoration of vision to normal, following the removal of infected tonsils; and Arrell¹⁷ describes a case with hemorrhage in each eye, that improved following an operation for chronic appendicitis. Redding¹⁸ in 1924 reports three cases of recurrent hemorrhage appar-

ently resulting from infection in the ethmoids and sphenoids.

The following case history is that of a man who was seen and studied a great many times, over a period of three years. For over one year he was practically blind from recurrent hemorrhages, and the vision ultimately has been restored to better than normal. The case was almost a clinic in itself,

Examination showed a well nourished man, height about five feet ten inches, weight 165 lbs. V. R. = 6/5+, L. 6/4. The right eye showed a slight scleral congestion; the pupillary reactions were normal; the cornea and iris were negative.

Ophthalmoscopic examination showed a slight cloudiness of the vitreous. The disc margins were indistinct. In the su-



Fig. 1.—Atrophy, pigment and proliferating retinitis. Evidence of old hemorrhage. August 23, 1922.

and seems to present indisputable evidence of the relation of this condition to focal infection, and for these reasons is presented in detail.

CASE: H. A. C., male, single, age 29, oil worker, was first seen August 23, 1922.

History was negative except that eight years previously he had had an attack similar to the present one, characterized by blurring of the vision of the right eye. He was subject to frequent attacks of rhinitis. He denied venereal disease. For past three weeks had noted blurring of the vision of the right eye and something like spiderwebs floating before this eye. Has had a severe nasal cold for past ten days.

perior nasal quadrant was an area, about 1x2 d.d. in size, of choroidal atrophy with massed retinal pigment, and from the center of this a slender structure extended inward for eight diopters, towards the center of the vitreous cavity, ending freely. (Fig. 1.) The left eye was normal to external and ophthalmoscopic examination.

There was a rhinitis and pharyngitis of moderate severity. The nasal septum deviated to the right, the right nostril being considerably narrowed. There were medium sized infected and congested tonsils and palpable and slightly tender cervical lymph nodes. There was a large amount of bridge work in the mouth. The blood Wassermann was

negative. Dental X-ray showed one de-vitalized tooth, with periapical bone absorption. Diagnosis. Acute chorio-retinitis; scar of old area of chorioretinitis with retinitis proliferous—probably from hemorrhage eight years before.

Potassium iodid was prescribed atropin was instilled in the eye, the rhinitis was treated locally, and on ad-

lar area of edema of the retina below the disc. The nose was shrunk and irrigated, and atropin instilled in the eye. The next day all symptoms were worse, especially the muscular soreness on rotating the right eye upward.

It was evident that a purulent ethmoiditis was the cause of orbital (muscle) symptoms, and a progressing acute chorioretinitis. The next day



Fig. 2.—White exudate covering inferior temporal artery below disc, and ischemia in area supplied by branch of this artery. November 22, 1922.

vice the involved tooth was extracted by a dentist. For a few days the "spiders" in the eye were worse, followed by a gradual improvement and subsidence of symptoms. On October 9, 1922, six weeks after the first visit, the eye was quiet, the vitreous clear and the vision 6/4.

November 6, 1922, one month later, the patient returned with a history of a sore throat followed by a rhinitis; and in the past three days, a return of the symptoms in the right eye—a blurring of vision and pain in the eye on looking upward. Examination showed a rhinitis with mucopus in the right nostril. Transillumination of the sinuses were negative. V. was R. 6/7.5—there being a central and paracentral relative scotoma. Fundus examination showed in addition to the previous findings, vitreous floaters and a triangu-

(November 8, 1922), a submucous resection of the nasal septum was performed, the right middle turbinate bone resected, and the right middle and posterior ethmoid cells uncapped.

Following the operation the eye findings were interesting. The area of edema below the disc did not increase; but a new and smaller one developed in the inferior temporal quadrant and soon subsided. A few days later the inferior temporal artery, where it passes thru the edematous area below the disc, became occluded, resulting in a large, pale area of ischemia below the macula (Fig. 2) and an absolute scotoma above. (Fields, Fig. 3.) The vision dropped to 6/12. Within another week this artery could be traced as a white line for a short distance from the disc and beyond that disappeared entirely. During the next

ten months, there was a gradual improvement in the eye. On February 5, 1923, the edematous area below the disc, and the ischemic area below the macula, had both disappeared; and the inferior, temporal artery had again become patent thruout most of its course. The vision had improved to 6/5+. There was still a scotoma above, tho less extensive than before. (Fields Fig. 4.)

the vitreous. The left eye was normal in every way and V. 6/4.

As this new attack had followed closely on an acute tonsillitis and the tonsils were evidently the seat of considerable infection, they were removed three days later under novocain anesthesia. Tho the clotting time was normal, there was some bleeding a few hours after operation; but this was controlled and recovery was unevent-

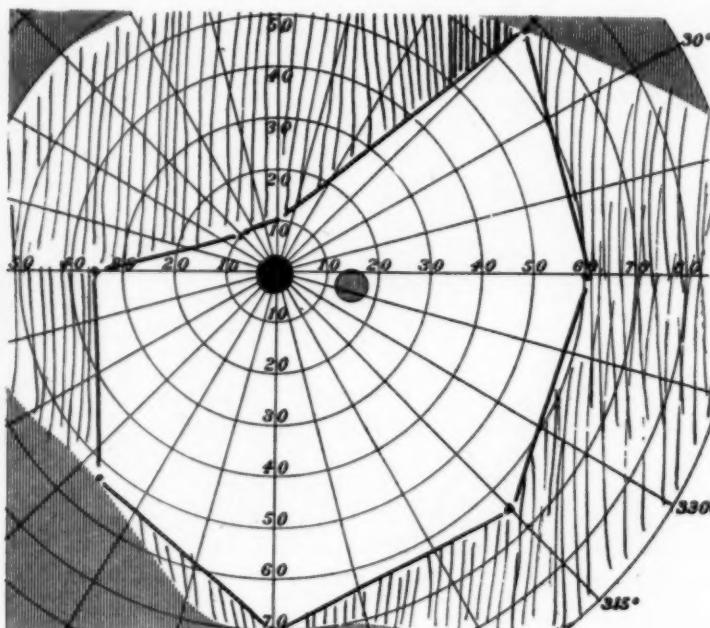


Fig. 3.—Field of vision, December 6, 1922. Blind above fixation point.

For ten months the patient was not seen. On December 8, 1923, he returned saying that the eye had been much better since the last visit. Two weeks before he had been ill with a sore throat, and had been unable to work for four days, but had been working since. The day before, the right eye had suddenly become blurred, and within one-half hour the vision had become very bad. Examination showed a congested throat, the nose showing no abnormality. R. V. was reduced to the counting of fingers at one-half meter, excentric, to the temporal side only. The fundus, examined with pupil dilated, could be seen on the nasal side only, the disc and the temporal two-thirds being obscured by blood in

ful. The right eye, however, showed no improvement, and vision became progressively worse, and the vitreous more cloudy, in the following months. There were apparently successive hemorrhages and V. was reduced to projection of light. During this time the eye was kept under the influence of atropin; and potassium iodid and the salicylates were given internally, apparently without effect.

Once or twice before, and again about this time, there were occasional attacks of mild pain in the frontal sinus region, and tho the ethmoid region continued negative, at times a small amount of pus could be demonstrated in the region of the right frontal sinus opening. An X-ray,

taken February 26, 1924 (Fig. 5), showed a very large and clear left frontal sinus, and a much smaller and cloudy right frontal sinus. On April 3, 1924, the right frontal sinus was opened intranasally under local anesthesia, a large passage being established into the sinus.

Previous to this the patient had complained of feeling tired after his day's work, tho he had not lost ap-

1924, and the dosage was gradually increased up to 0.8 mg. where it was maintained. In all, forty-six injections were given, and the local and general reactions were carefully watched for; none were noted.

During this time the right frontal sinus was repeatedly irrigated and negative pressure used. At first a small amount of creamy pus was washed out; but as time went on, nothing but

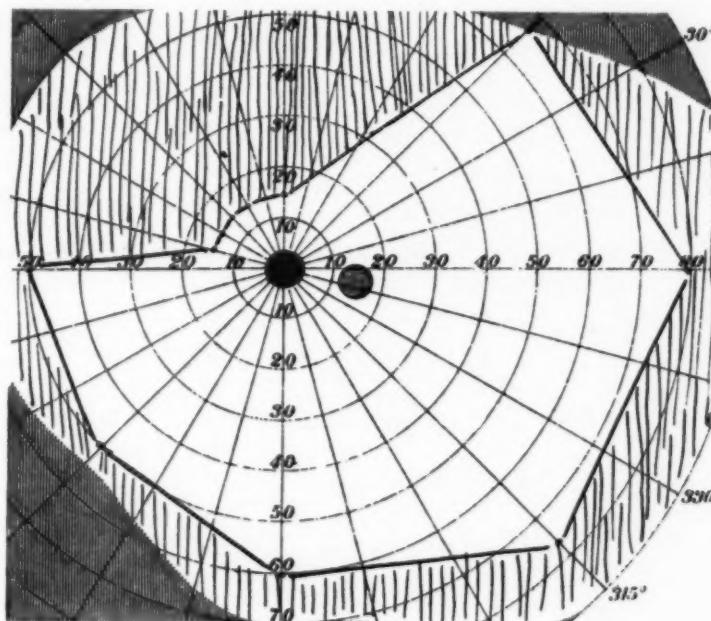


Fig. 4.—Field on February 5, 1923, improving.

petite or weight. On two occasions temperature was found a fraction of a degree above normal. He was referred to an internist for a physical examination. The report was that the examination was entirely negative, except for the presence of a few squeaky rales at the base of the lungs, and that this was not evidence of pulmonary tuberculosis. However, as there was more than a suspicion that the eye condition might be of tuberculous origin, subcutaneous injections of Old Tuberculin were begun, starting with a dosage of 0.0001 mg. to avoid the danger of focal reaction of increased hemorrhage. Injections were given at intervals of about one week for the rest of the year, February to December,

mucus or mucopus, and only in slight amounts was obtained. The eye throughout this period, from the time of the first hemorrhage, December 7, 1923, to January, 1925, thirteen months, had remained persistently bad. At times the vitreous would apparently begin to clear, a dim fundus reflex could be seen and vision would improve slightly (to perception of hand movements at $\frac{1}{2}$ meter) but most of the time light perception only was present, and there was no fundus reflex visible. There were repeated fresh hemorrhages. At times the patient could give the exact hour of the hemorrhage. These were never related to the time of the tuberculin injections. About the middle of this year (1924) the patient noticed

that when he could see a light it appeared double, and it was noticed that the right eye diverged and turned upward. The left eye throughout this time remained normal.

It now appeared that after thirteen months of repeated hemorrhages and practical blindness, the hope for recovery of the eye was slight. The injections of tuberculin were evidently without effect. The right frontal sinus

became very annoying, the right eye deviating upward nine degrees, and diverging seven degrees at the distance. The strabismus persisted for a few months, then rather rapidly subsided, and binocular vision was attained.

The patient was last seen December 28, 1925. Examination showed $V=6/4$, tho the upper half of the field of the right eye was obscured. The vitre-

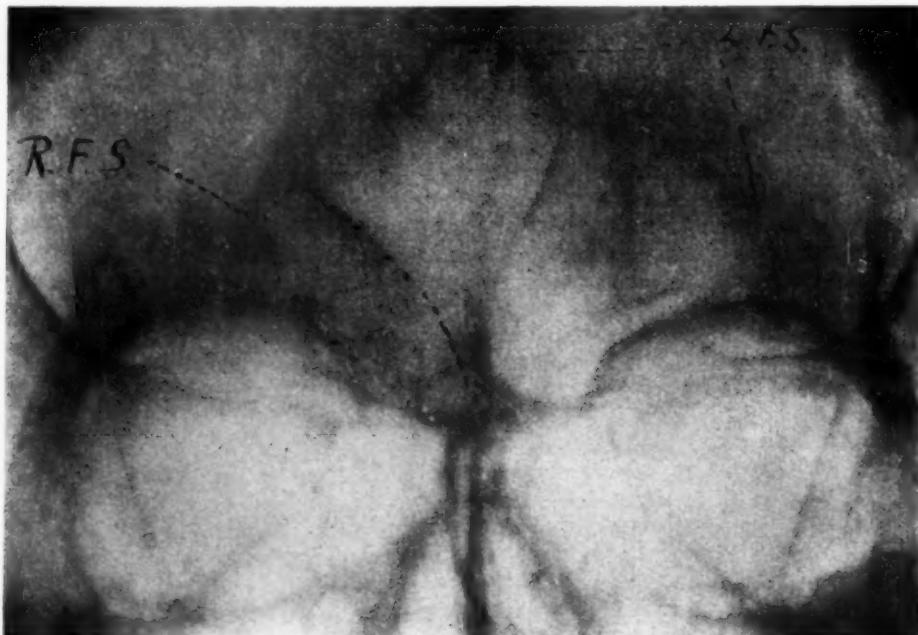


Fig. 5.—X-ray of sinuses February 26, 1924 R. F. S. Small cloudy sinus. L. F. S. Very large clear sinus.

was small, and was discharging a small amount of mucopus thru a patent opening which could be easily probed and irrigated, but at times it was somewhat painful and tender to percussion. As a last resort, a radical frontal sinus operation was proposed, and the Killian operation was performed on January 5, 1925. The sinus was small and entirely filled with polypoid substance. Recovery was uneventful. It was soon noted that vision was improving.

February 16, V. R. was fingers at 1.5 m. March 2, it was 6/10, on March 16, it was 6/6+, and on April 24, was 6/4. There were no hemorrhages in the eye after the frontal sinus operation was performed.

As the vision improved, the diplopia

had cleared completely and the fundus was well seen. The original choroiditic area was much larger than before, and there was considerable atrophy and pigment and an increase in the amount of the proliferating retinitis in this area. The ischemic area below the macula had entirely disappeared. The fields showed in the right eye a limitation in the superior nasal, and also in the inferior temporal quadrants, and there was a small paracentral scotoma (Fields, Fig. 6), but the eye is a useful one with more than the average acuity of vision.

SUMMARY OF CASE: This history naturally divides itself into several episodes which are briefly—(1) a choroiditis with hemorrhage eight years

ago, of unknown cause; (2) a uveitis coincident with an acute rhinitis, and clearing up following treatment of the rhinitis and extraction of an infected tooth; (3) a chorioretinitis and hemorrhage following immediately on an acute tonsillitis; (4) repeated hemorrhages persisting for thirteen months, causing blindness, not improved by tuberculin injections, but clearing promptly on the eradication of a small

the retinal capillaries. Hemorrhages are not recorded as a result of the high tension of glaucoma, or the low tension of phthisis bulbi.

Many of the pathologic lesions ordinarily classified as retinitis or chorioiditis are evidently circulatory or vascular changes rather than inflammations of the retina or choroid proper. It would seem logical to consider that whether the process is limited to a lo-

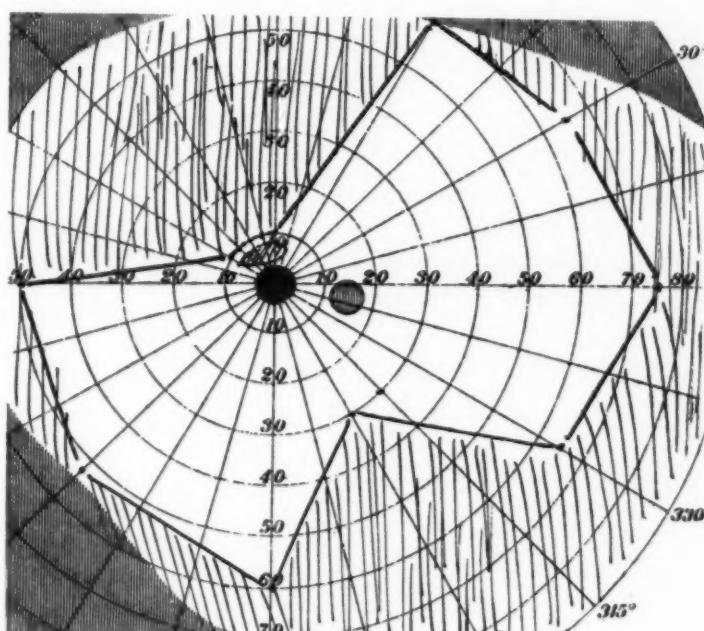


Fig. 6.—Field December 28, 1925. Limitation greatest in upper nasal and lower temporal portions

infected frontal sinus; and (5) the strabismus that resulted and that subsided spontaneously.

The conclusion is evident in this case at least that (1) there was a clear relation between the appearance of chorioretinitis and intraocular hemorrhages, and (2) that both were related etiologically to remote foci of infection.

F. Park Lewis, already quoted, argues that intraocular hemorrhage is not due to increased blood pressure, or to reduced coagulability of the blood, but to the action of bacterial toxins in the retinal vessel walls. The blood pressure normally is not over twenty or thirty mm. of mercury in

calized edema, ischemia or exudation, or goes on to a hemorrhage thru the vessel walls, whether the ultimate cause be tuberculosis, syphilis, septicemia, or, as in this case, multiple low grade focal infection, the pathologic process is essentially the same. This being the case the classification of hemorrhages in young persons would merge into that of patients of any age, the cases in elderly people being the same pathologic process, tho a greater susceptibility would doubtless exist, due to the greater brittleness of their vessel walls.

910 Security Bank Bldg.

BIBLIOGRAPHY.

1. Finnoch, W. C. Recurrent Hemorrhages into the Retina and Vitreous of Young Persons. J. A. M. A., Sept. 16, 1922, vol. LXXIX, p. 939.
2. De Schweinitz. Diseases of the Eye, 8th Ed., p. 418.
3. Ball. Modern Ophthalmology, 4th Ed., p. 476.
4. Duane. Fuchs' Textbook of Ophthalmology, 8th Ed., p. 651.
5. De Schweinitz. Concerning Ocular Hemorrhages and Their Treatment, Therapeutic Gazette, April, 1914, 3rd Series.
6. American Encyclopedia of Ophthalmology, vol. VIII, pp. 5800-5805.
7. Finnoch, W. C. Recurrent Hemorrhages into Retina and Vitreous of Young Persons, Transactions American Ophthal. Society, 1921, vol. XIX, pp. 238-258.
8. Harbridge, D. F. Intraocular Hemorrhages, Southwestern Medicine, Aug., 1925, vol. IX, p. 320.
9. Franchere, Fred E. Eye, Ear, Nose and Throat Symptoms Due to Dental Pathology, Journal Iowa Medical Society, Aug., 1924, p. 362.
10. Woods, Hiram. Subhyaloid and Vitreous Hemorrhages, J. A. M. A., July, 1911, p. 375.
11. Radcliffe, McC., and Young, C. A. Recurrent Hemorrhages in the Vitreous, Am. Jour. of Oph., 1923, vol. VI, p. 496.
12. Appleman, L. F. Am. Jour. of Oph., 1918, vol. I, No. 1, p. 24.
13. Tanner, A. S. Bacterial Toxin as a Cause of Retinal Hemorrhage, J. A. M. A., Nov. 16, 1918, p. 1650.
14. Lewis, F. Park. A Bacterial Toxin as the Chief Cause of Retinal Hemorrhage, J. A. M. A., June 15, 1918, p. 1813.
15. Cullom, M. N. Subhyaloid Hemorrhage, Am. Jour. of Oph., vol. II, p. 759.
16. Looper, E. A. Hemorrhagic Retinitis from Infected Tonsils, Am. Jour. Oph., vol. III, p. 226.
17. Arrell. Am. Jour. Oph., 1921, vol. IV, p. 284.
18. Redding, L. G. Recurrent Hemorrhages into Retina and Vitreous of Young Persons, Atlantic Med. Jour., 1924, vol. XXVII, p. 640.

CAN LOSS OF VISION DUE TO GLAUCOMA BE CHECKED?

GEORGE S. DERBY, M.D.

BOSTON, MASS.

Glaucoma is an important cause of blindness altho early diagnosis and treatment by established methods would prevent blindness in many cases. Careful testing of the visual field and intraocular tension should be resorted to when such cases are first seen. Follow up by social service workers is important to keep patients continually under supervision and treatment. Read before the Ophthalmic Section of the Baltimore Medical Society, December 2, 1926. See p. 210.

It is probably true that glaucoma causes one-third to one-quarter of the blindness occurring after forty years of age. I think that even our most pessimistic colleagues will admit that in practically all cases of this disease coming under our care before vision is entirely lost, much can be done to retard its progress. In early cases coming under our care it is often possible to reduce tension and check the disease: or at least to give the patient many more years of useful sight than he would otherwise have.

Why, therefore, if glaucoma is a disease which in favorable cases can be checked or retarded, is it such an important cause of blindness?

If we take the other important causes of visual loss we find that much has been done and that great progress has been made. In progressive communities during the last twenty years

an enormous reduction has been obtained in the blindness due to ophthalmia neonatorum. Organized effort all over the world has reduced and is reducing annually the amount of visual loss caused by trachoma. Industry has awakened to the fact that much of its visual loss is preventable. Atrophy of the optic nerve is another field in which much progress has been made. The discovery of the organism which causes syphilis, the great advances in its treatment, knowledge of the early involvement of the central nervous system, advances in the diagnosis and treatment of brain tumor, previously a hopeless chapter in medicine, all these are having a telling effect in the preservation of vision. The general public awakening to the desirability and practicability of conserving eyesight which is now fostered by many organizations thruout the world, is also a

favorable sign of the times. Now as never before are our hospitals equipped and functioning, to ameliorate the conditions of those unfortunate people who are threatened with the partial or total loss of the most important of our special senses.

It seems to me that glaucoma is the one important cause of loss of vision in which no concerted effort at conservation has been made. It is true that much has been added to our knowledge of this disease and its proper treatment in the last twenty years. If we except the epoch making work of Bjerrum, the advances in perimetry—and they have been very great—have occurred during that period; scientific tonometry is entirely a development of these later years. The first successful decompression operation on the eye was published by Lagrange almost exactly twenty years ago and since then a number of other valuable procedures have been added. And yet glaucoma continues to be one of the important causes of blindness.

The question which I venture to bring up before you tonight is this. In view of our present knowledge of the disease, is there no way in which its ravages can be at least somewhat limited? I believe the answer to be yes. It seems possible that a certain amount of success would follow a combined effort on the part of all concerned, and education in regard to the disease is essential to this. It does not seem that the information which we have concerning glaucoma is used to its best advantage. We will all agree that up to the present time no action to control glaucoma has been taken by any of the organizations whose function it is to conserve vision.

The public has not been educated to the significance and dangers of glaucoma and much can be done along this line. The Harvard Medical School gives a series of popular medical lectures to the public. Last winter my associate, Dr. Waite, gave one of these lectures, his subject being glaucoma. From his clear description of the disease a number of people made diagnoses on themselves and put themselves under treatment. This is one of the many ways in which the public can

be educated. Much can be done by us to educate the medical profession, and it needs to be educated also.

But if I am not mistaken one of the greatest services which can be performed is the education of the rank and file of ophthalmologists. My experience, which may of course be exceptional, indicates very strongly that if there is one disease which is handled badly by the general run of ophthalmologists, that disease is glaucoma.

I cannot believe that glaucoma is any more prevalent in our part of the country than it is elsewhere, yet in our glaucoma follow up file at the Massachusetts Eye and Ear Infirmary, which we started only a few years ago, we have now a few less than five hundred cases.

Many cases come to us with one eye gone and with central vision beginning to fail in the other eye, patients who have simply been too shiftless to seek earlier advice. Such a state of mind can only be combatted by education of the public, by conveying to them that loss of the visual function, even tho painless, is a most serious matter and needs early expert advice.

I think on the whole the general medical profession is alive to the seriousness of loss of vision, but I do not think it is conversant enough with the fatality of glaucoma and its prevalence.

Too often, however, it is the ophthalmologist himself who is at fault. Many of them are not trained in the up-to-date methods of recognizing the disease. Many more, once the disease has been recognized, fail to make, in a proper way, the essential tests which alone will help us to decide what our advice must be. Many more, once the disease has been recognized, fail to keep the patient under sufficiently careful observation and fail to employ the essential tests which alone will show whether or not the disease is progressing; and which will determine whether the present treatment is sufficient or more radical methods must be adopted.

Take the central vision in glaucoma. Many patients are referred to us with the following story. This case has been doing well, the vision has been normal until recently when it com-

menced to fail. What would you advise? I am almost ashamed to allude to this point before this enlightened audience, and I only do so because it so frequently occurs. We all know that the measurement of central vision is of no value as a gauge of the progress of glaucoma, until the disease has reached a late stage. Loss of central vision denotes a late stage of glaucoma; and yet, in most cases which we see reported in the literature of this country, the measurement of central vision is given a very important place. Central vision does not fail until the contraction of the field has reached the fixation point, until the nerve fibers supplying the foveal region have become affected. In rare cases this occurs comparatively early in the disease. The old and mistaken habit of waiting for central vision to be affected, before adopting operative means of reducing the tension, is one of the reasons why so many people are disabled by glaucoma.

Most careful examination and observation of a case is often necessary in order to make a diagnosis of glaucoma. All the tests at our disposal must be employed, and if the diagnosis be made, it is essential that the important tests be repeated at stated intervals, in order to determine whether or no the disease is progressing.

Of all these tests, I think that you will agree with me, that the one which gives us the best and the most accurate information is the careful measurement of the visual field. I think you will also agree with me that, of all the ordinary examinations practiced by the rank and file of American ophthalmology today, perimetry is by all odds the least well carried out. Examination of the tension with the fingers has no place in following a case of chronic simple glaucoma. Needless to say it should be always taken with the tonometer. A series of tonometric measurements will often help us to decide when to hold on and when to employ more radical measures. We not infrequently see cases with slightly increased tension, 30 mm. (Schiötz) and perhaps a little more, where the increased pressure is well tolerated and the field shows changes only after

years. On the other hand we not infrequently see cases in which we are never able to discover a tension of over 20 mm., and yet the disease is making unmistakable progress. We have come to realize that a tension which is well borne by one eye will soon cause damage in a less resistant one. We can all recognize a cupped nervehead, but we cannot estimate the amount of cupping accurately; and neither can we determine accurately the progress of the disease by watching the changes in the nervehead.

It comes down to the fact that we must use all the methods of examination at our disposal, in making the diagnosis and in estimating the progress of the case; but, as was stressed before, it is perimetry which gives us the most valuable information. There are several reasons why the rank and file of ophthalmologists are so inexpert in taking a visual field. First, its importance has not been sufficiently emphasized by their teachers; secondly, proper methods have not been taught them; and third, they have been told that field taking is a very time consuming process.

The fault lies, therefore, with the teachers of ophthalmology and they must hold themselves responsible for seeing that all our medical students shall know the importance of perimetry in ophthalmology, shall know how to take a rough field by the confrontation method, and shall know something about the perimeter and the way in which it is used. With those who intend to practice ophthalmology we must go further, and our examining board should not qualify any man until he has shown a good working knowledge of perimetry. Taking a glaucoma field requires time, but I feel confident that, in thirty minutes and often less, a person who is reasonably expert, as every ophthalmologist should be, can obtain the essential facts. And by careful perimetry he can obtain information that can be obtained by no other procedure. It is true that the first field taken on a case may require additional time, and that the patient must be trained to know what is wanted just as the examiner must be.

To those unfamiliar with the first

changes in the glaucoma field, the nasal step and the enlargement of the blind spot, it is quite possible and probable that the early case will be overlooked, and, as all know, the secret of conserving vision in this disease is to recognize it early. Happy the ophthalmologist who can say that he has never overlooked an early case; if there be such a man I would like to know him.

I often think it would be a good plan to have a sign "glaucoma" printed in large letters on the wall of our examining rooms; and that it would be a good thing for us all to regard every person over forty who comes to consult us as a possible glaucoma case, until the contrary is proved. Experience has shown us, that if glaucoma be constantly borne in mind a considerable number of cases may be picked up which would otherwise go unrecognized until a late stage of the disease. Many cases come to us with outspoken glaucoma, which have been previously examined by an ophthalmologist, and which should have been recognized many months, and perhaps even a year or two before. Many cases come to us who have been allowed to drift from bad to worse because a careful examination of the field, the tension and the ophthalmoscopic picture have not been made a routine as long as central vision remained intact.

May I take a few minutes of your time to tell you what we are doing to try to alleviate somewhat the glaucoma situation in our hospital. It goes without saying that as far as possible new and old patients have a finger tension taken at each visit. The nerve-head is viewed in all new cases, with glaucoma in mind; this is of course the routine of most clinics. In every suspicious case we try to make a most careful examination.

The diagnosis having been made the patients automatically are registered on our follow-up file, the proper treatment for each individual is decided to the best of our ability. Operated cases where the tension has been reduced to a satisfactory point report to us every six months for a complete examina-

tion. Miotic cases are kept under careful observation until we feel sure that their treatment is being carried out conscientiously and with the desired result; they are then instructed to report every four months for a careful examination. The follow-up is conscientiously carried out by our social service and it is a very heavy tax on their time. We have two half-time workers who practically devote themselves to these cases. We see forty to fifty glaucoma cases a month in our clinics, and the number is growing. This gives us ample material for teaching our medical students and internes about the disease, and the many fields which have to be taken help to make our internes, before they graduate, capable perimetrists. We agree that in hospital practice miotic treatment should be adopted only in selected cases, but we feel that with our efficient follow-up system its use may be somewhat extended.

The earlier in the course of glaucoma an operation is performed the more favorable the result. Thus the earlier we get our case the more can be promised the patient. Therefore in the not inconsiderable number of patients who come to us with only one eye frankly glaucomatous we are making the most careful efforts to discover the earliest signs of the disease in the unaffected eye. In this we believe that we are being helped by an examination of the light sense, as pointed out in two previous communications.*

I must apologize again for bringing before you a paper which contains nothing which has not been said many times before by many different writers. My only excuse is the desire to urge a more concerted action in preventing the ravages of this very destructive disease.

23 Bay State Rd.

*The Light Sense in Early Glaucoma, Particularly the Achromatic Scotopic Threshold at the Macula (A Preliminary Report), by J. Herbert Waite, George S. Derby, and E. B. Kirk. *Transactions of the Ophthalmological Society of the U. K.*, vol. XLV, 1925. London.

Further Studies on the Light Sense in Early Glaucoma, by George S. Derby, J. Herbert Waite, and E. B. Kirk. *Archives of Ophthalmology*, vol. IV, No. 6, 1926.

SURGICAL TREATMENT OF SENILE CATARACT COMPLICATED BY GLAUCOMA.

LUTHER C. PETER, M.D.

PHILADELPHIA, PA.

This paper is based on twenty-six cases: ten of mature and hypermature and sixteen of incipient cataract. Such cases are more frequent than might be supposed. Cataract frequently complicates glaucoma and in its development may cause glaucoma. The share of lens toxicity in the latter group is uncertain. Incipient cataract should receive prompt treatment to arrest the glaucoma if possible; trephining being preferable to iridectomy. Where glaucoma exists after cataract extraction cyclodialysis may also be considered. Read before the Section on Ophthalmology, College of Physicians, November 18, 1926.

There probably is no type of case in ophthalmic surgery which is more trying in its management than senile cataract complicated by glaucoma. The best method of handling the situation becomes doubly interesting when the frequency of this dual condition is considered. In order to form the basis of my observations and experiences, I have selected a series of twenty-six typical cases to represent a much larger group which might be included, but which would not change the outstanding facts and conclusions. They are all taken from my private case records.

Briefly, an analysis of these cases shows the following interesting facts: The first group of ten cases includes five mature and five hypermature cataracts in which extraction became necessary, either to control the glaucoma, or for visual purposes as well as to control the glaucoma. Four of the hypermature cases were delivered in capsule, and one by capsulotomy. The results were; two good, two fair, and one poor. The two marked fair have required no further treatment, but both show a tendency at times to irritability and some increase of tension. They might be called surgically good because no further treatment was required. Six were delivered by capsulotomy, one hypermature and five mature. The results in this group are: two good, one fair, and three poor. In a total of ten cases by both methods of extraction, the results are: three good, three fair, and four poor.

The four rated as poor were all cases of primary glaucoma, the remaining six being secondary in type. Three of the poor cases were subsequently op-

erated on for control of the glaucoma, two by cyclodialysis with good results, and one by trephining with fair results, the eye subsequently remaining quiet. The fourth has thus far not submitted to operation. In the ten cases, therefore, the ultimate results were good in five cases, fair to satisfactory in four, and poor in one. The results herein recorded relate to the control of the glaucoma and not to visual results, because a majority of hypermature cases are of so long standing that one does not hope to obtain good vision.

The second group, of sixteen cases, includes only incipient types of cataract; and they are separated from the first group because the surgical considerations necessary are totally different from the former. In this group, fifteen were primary glaucoma, and one was secondary to acute uveal disease. In eleven cases trephining was the operation of choice with eleven good results, the glaucoma remaining under control for varying periods up to the present, most of the cases for five years or more. In three cyclodialysis was practiced, results being good in two instances and fair in the third. In one instance, a case of secondary glaucoma following an active uveitis with complicated cataract, an iridectomy was performed with complete arrest of the glaucoma. In the last case (one which is illustrative of a number which were operated on some years ago), an iridectomy was practiced with poor results. Visual fields and central vision gradually failed. The incipient cataract progressed to maturity in but one instance, and probably has been operated upon elsewhere, the case having passed out of my hands.

ED
Exhibit A

Case	Type of Cataract	Type of Glaucoma	Operation	Results	Subsequent Glaucoma Operation	Final Results
1	Hypermature	Secondary	Intra-Cap.	Fair		Fair
2	Hypermature	Secondary	Intra-Cap.	Fair		Fair
*3	Hypermature	Primary	Intra-Cap.	Poor		Poor
4	Hypermature	Secondary	Capsulotomy	Good		Good
5	Hypermature	Secondary	Intra-Cap.	Good	Cyclodylasis	Good
6	Mature	Primary	Capsulotomy	Poor	Cyclodylasis	Good
7	Mature	Primary	Capsulotomy	Poor	Trephining	Good
8	Mature	Primary	Capsulotomy	Poor		Fair
9	Mature	Secondary	Capsulotomy	Good		Good
10	Mature	Primary	Capsulotomy	Fair		Fair

INCIPIENT CATARACT AND PRIMARY GLAUCOMA—15 CASES

Exhibit B

Trephining	11 cases	Results Good.....	11 cases
Cyclodylalisis	3 cases	Results Good.....	2 cases
		Results Fair.....	1 case
		Results Good.....	1 case
Iridectomy (Cataracta Complicata and Secondary Glaucoma)	1 case		
Iridectomy (Primary Glaucoma)	1 case	Results Poor.....	1 case

In the combined groups, there are many phases which might be profitably discussed, but I limit myself to a few aspects which seem to be of greatest value.

First, as to the frequency of finding this dual condition in the same patient: That primary glaucoma should be complicated by cataract is a natural sequence of events. One of the outstanding etiologic factors of cataract is a chronic congestion of the ocular tissues from many causes, chief of which is a low grade uveitis. In glaucoma one rarely finds the uveal structures free from pathology. Furthermore, the nutrition of the eye is below par. It is probable, therefore, that in primary glaucoma, incipient cataract may be regarded as a complication. As the cataract matures, it often becomes an added factor in the increase of the glaucoma. Mature and hypermature cataracts, on the other hand, are more frequently accompanied by secondary glaucoma than by primary. A careful study of patients over forty years of age, suffering from glaucoma, reveals the presence of incipient cataract in many. The ophthalmoscope and oblique illumination alone should suffice to uncover the dual condition, but a more careful study by means of the slitlamp has probably helped to uncover a large number.

The etiology of secondary glaucoma in the more advanced stages of cata-

ract is of much interest. Is it the result of lens toxicity, altered lens chemistry, or is it the result of mechanical blocking of the angle, or do both factors contribute? There are many who believe that lens toxicity is the important factor in hypermature or Morgagnian cataracts. If this is the cause, one naturally asks, "Why does the glaucoma continue in so many cases after an intracapsular extraction?" Altered lens chemistry or "lens toxicity" may be an important factor in the production of an iridocyclitis following a capsulotomy operation, with the ultimate development of glaucoma. When, however, the lens is delivered in capsule, one would reasonably expect that the glaucomatous process should become arrested. Actual experience is to the contrary in many instances. Furthermore, the glaucomatous inflammation in mature or hypermature cataract does not differ materially from that ordinarily observed, excepting probably in violence. The slitlamp, so far as I have been able to observe, does not show the aqueous changes and posterior corneal deposits which we see in glaucoma secondary to uveitis.

There is a general feeling that toxicity is greater in hypermature than in immature and mature cataract. The lens chemistry naturally undergoes greater changes as the lens matter liquifies, but along with this fact, it

should be remembered that hypermature cataract is of long standing, and that as a consequence, the chance of mechanical blocking of the angle also increases. Whatever role toxicity may play in the incidence of glaucoma in the later stages of cataract, the persistence of glaucoma after the lens is extracted, in all probability, is due to mechanical blocking of the angle. The better results obtained after extraction in capsule, than after capsulotomy, are probably due to the sanitary condition of the angle and the aqueous chamber, rather than to the removal of lens toxicity.

In the matter of the general management, the question naturally arises, should the presence of incipient cataract influence our treatment of the glaucoma? My personal reaction to this question is that it should give us much concern. The presence of cataract, even in incipient form, should point the way to active and energetic treatment to arrest the glaucoma, if possible. The swollen lens of immaturity will contribute its share in increasing the glaucomatous process.

The chief question, however, which one might ask is: "If glaucoma is complicated by the presence of incipient cataract, can we follow the indications for operation as they are found in a noncomplicated case?" While the demand for operation in a complicated case is greater, due consideration must be given to the possible future extraction of the lens, if ultimate visual results are to be obtained. While all surgeons will agree that the first step necessary is arrest of the glaucoma, if possible, they are not agreed as to what this step shall be. It would lead us very far afield if we were to pause to discuss the pros and cons of each measure which we might individually adopt. It might engage our attention for an entire evening. I can only express my own preference for such measures as I believe from my experience insure to the patient the greatest ultimate good. If the glaucoma is secondary to a uveitis and operative interference is indicated, an iridectomy is the operation of choice. Repeated paracentesis of the anterior chamber has carried many a patient thru to a

successful issue; but there are instances when one must go a step further and, if so, an iridectomy should be selected.

In primary glaucoma complicated by incipient cataract, after carefully weighing the evidence, I find sclerocorneal trephining has given me the best results. In expressing this conviction, I am not unmindful, first, of the fact that any operation may tend to hasten the maturity of the cataract, and that a poorly performed trephining is especially apt to do so; nor second, of the fact that section of the cornea for extraction of the lens is difficult in a trephined eye with a good filtering bleb. Finished technic, however, is a responsibility of the surgeon, in trephining as well as in a properly performed iridectomy. The generous use of atropin after a trephining, in my experience, insures as sanitary a condition of the aqueous chamber as one finds after a properly performed iridectomy. If the cataract has reached the stage of immaturity and extraction becomes possible in the near future, an iridectomy may be the operation of choice, with the added possibility of a subsequent trephining or a cyclodialysis after extraction. *This method of procedure, however, offers less hope of satisfactory visual results than perfect control of the glaucoma before extraction is undertaken.*

My reasons for not advocating iridectomy for the control of glaucoma with incipient cataract as a complication, are based on the following experiences: In the first place, iridectomy fails in too many instances to arrest the progress of simple uncomplicated glaucoma, to give it a very high rating among the surgical procedures at our disposal. Second, if it fails in uncomplicated cases when, to the necessity of holding the tension and fields over a period of years until the cataract reaches the stage of maturity, there is added the danger of increased blocking of the angle by the cataractous lens. My faith in an iridectomy has decreased as cases so managed multiplied. In addition to these two very good reasons for failure, there is a third which carries equal weight. After extraction by capsulotomy, few cases

of primary glaucoma are arrested, because of the closure of the upper angle by adhesions, tags of capsule, lenticular or inflammatory debris. In fact, even an intracapsular operation is apt to be followed by a continuation of the glaucomatous process.

In the second group of cases submitted for discussion, there is included but a single case treated by iridectomy—the last in the group. Unfortunately, it is not an isolated case. Others, similar in character, might be added from private patients upon whom I personally have operated, and some also upon whom other surgeons have operated with like results. Whatever the value of an iridectomy may be in selected uncomplicated cases of glaucoma, it is disappointing in the complicated cases under discussion.

In considering the general management of mature and hypermature cataract complicated with glaucoma, it is quite apropos to discuss prophylactic measures. The question naturally arises, "When shall we operate upon a unilateral cataract?" In view of the danger of secondary glaucoma developing in mature and in Morgagnian cataracts, and in view of the unsatisfactory results which are apt to follow the extraction of such cataract if the lens capsule is ruptured, it seems imperative that, unless there is a well founded reason why the lens should not be extracted, the responsibility rests with the surgeon to advise extraction of a mature cataract, even tho vision in the fellow eye is good. The inconvenience of glare, the annoyance which is sometimes experienced by patients when a cataractous lens is removed while the fellow eye functions satisfactorily, and the disappointment of patients after such an operation because the eye can not be glassed to function with its fellow, are much outweighed by the dangers incident to delay. When the facts in each instance are properly stated, the average patient will elect the safer method of procedure. Failure of the patient to cooperate with the surgeon at least frees him from responsibility. It is my belief, however, that it is manifestly unfair to a patient to tell him that he runs no risk in allowing a mature cata-

ract to remain until vision in the fellow eye fails him. Under average conditions a mature cataract should be extracted.

Finally, what is the best method of extracting a mature or a hypermature cataract complicated with glaucoma? Ophthalmic surgeons are practically agreed that such cataract should be extracted in capsule. The technic may differ, but an intracapsular extraction is indicated for several reasons. It is the experience of most surgeons that inflammatory reactions are common if the capsule is ruptured; that it is more difficult to thoroly rid the aqueous chamber of lens substance and thickened capsule by means of irrigation, than in an average case of senile cataract. The presence of thickened capsule and lens debris not only acts as an irritant to further favor obstruction of the angle, but it necessitates a subsequent hazardous dissection operation if good visual results are to be obtained. In a former communication before this Section, I voiced the opinion that a needling operation after cataract extraction is not free from danger. Further experience has furnished corroborative evidence that it is to the advantage of the patient to be spared a secondary operation, if possible. After extraction of hypermature cataract complicated by glaucoma, the dangers of needling are proportionately increased.

A technic which is most satisfactory for extraction in capsule is by means of Kalt forceps, with gentle pressure from below by a Smith hook. Moderate pressure with the hook serves the double purpose of assisting in obtaining a grasp of the capsule and of rupturing the zonula. If care is observed in properly coordinating the grasp of the forceps and the pressure below, delivery is possible in a majority of instances without rupture of the capsule and without vitreous loss. One should stop short of danger of vitreous prolapse, and have recourse to extraction with capsulotomy in which the anterior capsule is removed by capsule forceps. Altho it is advantageous to extract all senile cataracts in capsule and especially so in Morgagnian types, vitreous prolapse is an accident

which one should seek to avoid, even in uncomplicated cases.

The treatment of glaucoma persisting after extraction of the lens is discouraging but not hopeless, if the hyaloid membrane has not been ruptured. The iris, as a rule, is degenerated and myotics, therefore, are of no avail. One has the choice of two operations—a sclerocorneal trephining or cyclodialysis. If trephining is elected, the trephine opening should be placed in the lower part of the limbus, or where the anterior chamber is of greatest depth. It will not yield good results if placed in the iris coloboma nor even in any part of the corneal incision. Care should also be observed, if a peripheral iridectomy is practiced, that the vitreous does not prolapse. In fact, it is safer to avoid an iridectomy, and thus surely avoid vitreous prolapse into the trephine opening.

Cyclodialysis has yielded good results in three cases in my hands. It

is not a popular operation with many because of the rather low percentage of good results. It has one advantage. If carefully performed, there is little danger of doing any serious harm. In my limited experience with the operation, it seems to be better adapted to postextraction glaucoma and to late stages of the disease, than to the early stages when vision must be preserved for many years. It is probable that patients subjected to cyclodialyses have not been selected with sufficient care. Good results should not be expected in the inflammatory types when the canal of Schlemm is sealed. In glaucoma simplex, however, one would expect to find this operation of considerable value. Greater care in the selection of the cases, in which cyclodialysis seems to be indicated may yield in the future better results than those thus far recorded.

N. E. Cor. 20th and Chestnut Sts.

SCISSORS-NEEDLE FOR DISCUSSION.

A. KOLEN, M.D.

LENINGRAD, U. S. S. R.

The point of this instrument can be introduced thru the cornea and lens capsule like a needle and the blades then opened and used as scissors.

The operation for removing senile cataract is not to the present day perfected enough technically to allow generally the removal of the clouded crystalline lens together with the capsule. At least in most of the cases, the capsule remains, and afterwards the sight is sometimes impaired by thickening and opacity. This renders necessary

another operative intervention: the so-called operation for secondary cataract; which is a thin film suspended by threads of the zonula of Zinn from the ciliary body. The problem of the operator is to make in the part of this membrane lying in front of the pupil, an opening big enough for the light rays to go thru. The technical dif-

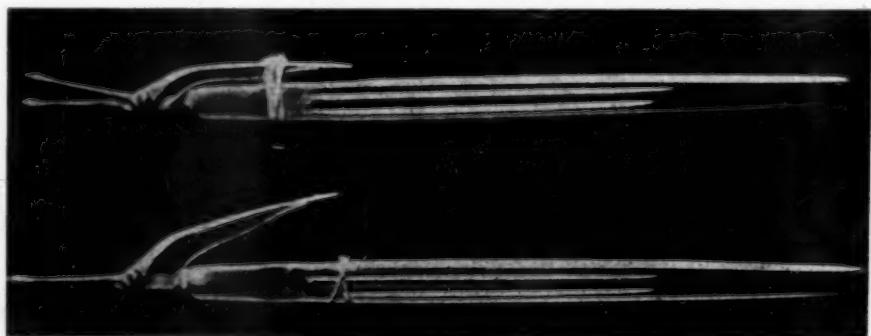


Fig. 1.—Scissors needle for discussion (Kolen). Above handle depressed. Below scissors closed for introduction.

ferences of this operation depend on the following conditions:

1. The membrane is often very dense, and the implement should be very thin and sharp.

2. Its motility requires a point of support requiring strength in the construction of the operative implement itself, or in the combination of operative steps with different implements, that is fixation and section.

3. Its elasticity, thanks to which by insufficient size of the opening formed by the operation, it shuts again after the operation, due to the elastic forces.

The existing methods of this operation have each their good qualities and defects. Some of them are not able to secure the steadiness of the obtained opening; discussion with the needle, Knapp's knife, etc. Others sometimes traumatize too much the adjacent parts; extraction with the capsule forceps, etc. Still others excessively complicate the operation. For instance, the cutting out of a piece of the capsule, similar in type to the iridectomy as devised by Roeder and others. The description of these different methods may be found in the manuals of ocular operations: Terrien,¹ Czermak,² Elschnig³ and others.

Among the later authors Levinsohn⁴ recommended for discussion a very delicate curved knife, partly resembling the knives of Knapp and von Graefe. Pape⁵ described the operation practiced in Hess' Clinic, the principal features of which is a cutting of a limb by means of a keratome and several incisions done with the forceps scissors introduced thru the incision.

Examining the principal features of these methods we can divide them into two groups. The first are the methods of piercing, discision needle, Knapp's knife, etc. By these methods it is easy to make an opening in the capsule, except in the cases of comparatively dense and mobile membranes. But the results are often not permanent. The second group is the method of section, or cutting out a part of the capsule, capsule forceps, or even its entire removal, also by means of a tear. By these methods a good transparency of the pupil is obtained after the opera-

tion; but there is danger of irritating the ciliary body by the operation, followed by a cyclitis.

It is difficult to establish definitely the needed qualities of methods of this operation; as the points of view of the operators in estimating these methods are quite different and every one has his favorite way. It is quite natural that by examination of all these methods there should arise the idea to unite in one method the advantages of piercing and cutting. The first to make an attempt in this way was Strawbridge,⁶ who proposed in 1877 tiny scissors, which resemble in appearance the discission needle, only considerably larger. Strawbridge restricted himself to a single communication about this implement and afterwards there were no references in the literature to its application. The second to propose a similar instrument was Levinsohn, who modified the scissors of de Wecker for iridectomy, in considerably reducing their branches and sharpening their external sides, to make them cut also from the outside. Thru a very rigid cornea the scissors are introduced after a previous piercing of the cornea with the discission needle which forms in the cornea a canal for the introduction of the scissors. Tho Levinsohn himself was satisfied with the adaptation of his method other ocular surgeons (Czermak) do not confirm its results.

According to my instructions an instrument for the discussion of secondary cataract was prepared in the implement workhouse of the Leningrad District-Department of Medical Providing. I called this instrument the "Discission Scissors-Needle." The principle of its construction is the following: I started from Bowman's operation for discussion by means of two needles (the socalled two needles operation). The most important point of this method is its adaptation to rather dense and especially mobile membranes of the secondary cataract; as the movements of the needles in opposite directions after the piercing of the capsule, prevents the falling back of the capsule, notwithstanding its motility. The defect of this method is the piercing of the cornea in two spots, the indispensability of directing during the

operation the operation and the moving of two needles, estimating their removal relatively to each other, and the possibility of fixing the eye with the forceps, as both the operator's hands are otherwise occupied.

I thought it was possible to unite the advantages of Bowman's method and partly of the cutting methods, by composing a needle from two halves which closely adjoin each other in the plane in which lies the broad profile of the needle, these halves fastened together by means of a little screw placed high enough not to disturb the introduction of the needle in the anterior chamber in the moment of piercing the clouded capsule with the introduced closed needle. Its branches

are separated by means of a little lever fastened to the handle of the needle and do not depend in any way upon the mobility of the capsule. The sufficiently sharp edges of the needle allow one to make a cut of any needed size. The turning of the needle after the first cut to any angle, and repeating one or several cuts in every direction do not present any difficulties. After finishing the cut the lever is again released, and the double needle is extracted from the wound in the folded position in the same way as a common discussion needle. The scissors-needle I propose, when closed, does not differ in its wide profile in any way from the common needle.

Dostoewsky Street, N. 23, Log 2.

BIBLIOGRAPHY.

1. Terrien. *Chirurgie de l'Oeil et de ses Annexes*, Paris, 1902.
2. Czermak. *Die augenärztlichen Operationen*, Wien, 1904.
3. Elschnig. *Die augenärztlich. Operationen in Graefe-Saemisch Hand. d. ges. Augenheilkunde*, III. Auflage.
4. Levinsohn. *Ueber ein einfaches und sicheres Verfahren der Nachstardiscussion*. *Klin. M. f. Augenh.*, 1909, vol. XLVII, p. 295.
5. Pape. *Ueber Nachstaroperation mit der Pinzettenenschere*. *Arch. f. Augenh.*, 1923, vol XCII, Ht. 3.
6. Strawbridge. *Two New Instruments for Secondary Cataract Operation*. *Amer. Jour. Med. Sc.*, 1977, p. 449.
7. Levinsohn. *Beiträge zur Nachstaroperation*. *Cent. f. p. Augenh.*, 1899, p. 207.

CONGENITAL FUNDUS ANOMALIES.

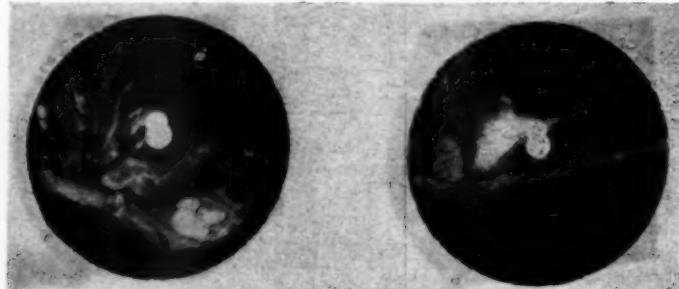
C. O. SCHNEIDER, M.D.

CHICAGO, ILL.

Two brothers presented anomalies of the retina in both eyes. The younger also exhibited hyaloid remains; the older showed the lower portion of the retina rolled up in a way not previously described. See illustrations. Read before the Chicago Ophthalmological Society, October 19, 1926. See p. 204.

I have the privilege of presenting two cases of congenital fundus anomalies occurring in brothers. They came to me at the Illinois Charitable Eye and Ear Infirmary, on the service of

Dr. Dwight Orcutt. Thru the courtesy of Dr. Robert Von Der Heydt, these interesting fundi were successfully photographed, as you will see from the pictures shown, and the cases



Figs. 1 and 2.—Congenital fundus anomalies. Fig. 1, Right eye; Fig. 2, Left eye.

are also here for your examination. The various changes show the intimate relationship existing between several quite different congenital malformations.

The younger boy, B. K., age ten, presents a small conus or crescent at the upper and nasal side of the nervehead, and there seems to be a lack of macular differentiation in both eyes. Near the lower border of the right lens, and extending from there backward and somewhat templeward is a rather large and almost transparent structure that fans out into a funnel shape. The upper border of this funnel can be traced to the retina, where it forms a white line that bifurcates and somewhat resembles proliferating retinitis. This entire structure in all probability is a retained hyaloid, or Cloquet's canal. The lens in this eye presents numerous punctate dots or hooklets, in the deep cortex. The lens changes in the left eye must have been more extensive, resulting in congenital cataract, as this eye is now aphakic, due to operative procedure.

Most interesting, however, are the changes found in the eyes of the older brother, W. K., aged twelve. His vision with correction in the right eye is fingers at three feet, excentric. The vision in the left is 20/100. His left fundus presents a large pigmented and white patch extending from the nervehead to the macula. Below the patch and extending from beneath the nervehead templeward and slightly upward, covering the macula and continuing outward as far as it can be followed with the ophthalmoscope, is a fold of retina projecting forward into the vitreous.

The right eye presents a condition

which is no doubt one of extreme rarity. The entire lower half of the retina in this eye is rolled up in an outward direction in the manner of a shade roller. The roll, situated somewhat diagonally, extends laterally in both directions as far as can be seen with the ophthalmoscope. It covers the lower half of the nervehead, extends over the macula and derives its vascular supply from the normally present branches of the central disc area. The choroid, devoid of retinal covering, is exposed in the lower half of the fundus. The peculiar position of the retina probably presents some aborted coloboma or cyst formation.

A few cases have been reported where the retina has been doubled, the edges being turned outward as in this case. These however pertain to the retinal edge of the ciliary border. In the ciliary coloboma of Cochin China fowls, which is a normal phenomenon, the edges of the retina are regularly turned outward (Lieberkuehn). In no instance has the retina been reported rolled up, as we see it in this case. In addition, there are two flame shaped pigmented patches near the disc. One of these patches near the macula shows an adhesion to the retinal roll. They are no doubt the remnants of hemorrhages.

A thick cord of fibrous tissue, containing a blood vessel, extends from the lower temporal ciliary area to the nervehead. This is analogous to a hyaloid remnant.

A careful and exhaustive perusal of ophthalmic literature fails to show any reported case which, in any way, resembles this most interesting condition.

31 N. State St.

PENETRATING WOUND THRU ORBIT INTO MIDDLE FOSSA.

EARLE B. FOWLER, M.D.

CHICAGO, ILL.

The end of a glass tube, 4.5 mm. in diameter, entered above the inner canthus and passed backward into the middle cranial fossa, and broke near the point of entrance. Symptoms were not alarming and the X-ray gave first evidence of depth of injury. The fragment was extracted and complete recovery followed. Read before the Chicago Ophthalmological Society, October 18, 1926. See p. 203.

Miss M. L. S., aged 44, teacher. On December 24, 1925, while working in the chemistry laboratory, Miss S. stooped over to pick up something from the floor. There was a long glass

The cornea was clear, there was no injection; pupil dilated to 6 mm. and fixed. Lens and vitreous clear and fundus undamaged. Vision Right 20/30: Left 20/70.

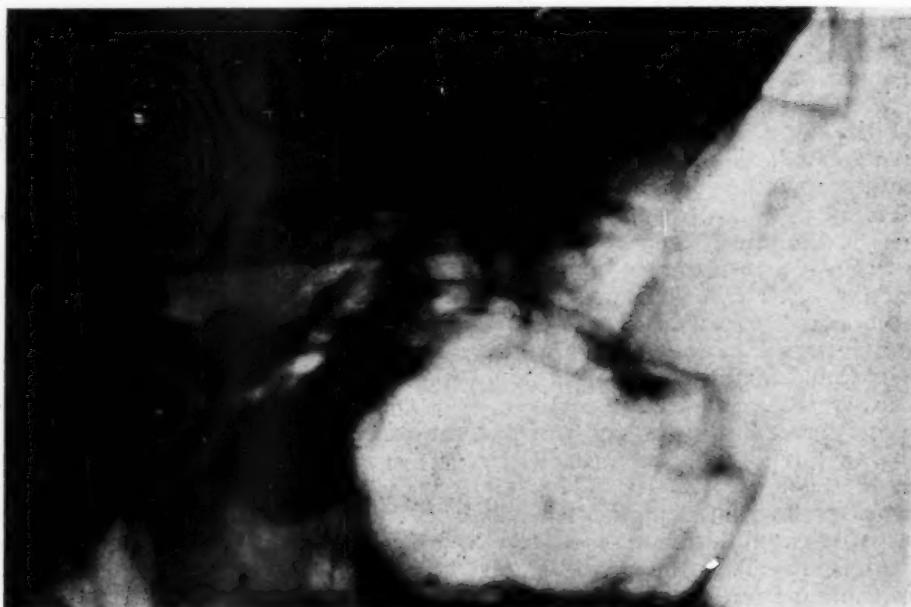


Fig. 1.—Glass tube penetrating orbit into middle fossa of skull. (Fowler's case.)

tube standing on end in a rack, the top end projecting out so she struck it with her head. There was no great pain or shock, but some blood running over her left eye and a confusion of vision. She came at once to the office in a cab.

There was a small, ragged cut, about 5 mm. long, in the upper lid, just above the inner canthus. No bleeding and a minimum of pain at this time, and no extravasation of blood into the tissues evident. The lid opened readily tho not fully. Movement of the globe was restricted in all directions, but there was no proptosis. There was about 10° movement up, down and nasally, and considerably more temporally.

The patient was sent to the hospital and eyes put at rest. Fear of infection deterred me from immediate exploration for glass particles.

Healing was rapid. No pain, no distress on turning the eyes, no fever. At the end of a week there was no increase in the excursion of the left eye. Patient permitted to go home for New Year, to return for X-ray and surgical treatment.

She came to the office the following week and was sent for X-ray. The immediate report of a 6 cm. tube, located as these pictures show, was somewhat startling.

Tho there were no active symptoms, Dr. Bassoe and Dr. Wilder

agreed that removal should be attempted. With Dr. Wilder's help the end was dissected free and the entire piece came out very readily, followed by a flow of clear liquid presumably cerebrospinal fluid. A firm bandage was applied to the closed wound. Recovery was uneventful.

There has been steady improvement, in movement and use, until at present, October 16, 1926:

R. V. 20/30: +0.50 - +0.25ax 105° =
20/15: Near point R. 24 cm.

L. V. 20/40: +0.50 - +0.25ax 90° =
20/20: Near point L. 43 cm.

There is now good lateral movement. With a red glass before one eye the two lights remain together up to the last 10° nasally and all the way temporally, to the left. Upward single vision is maintained for 20° and downward for 20°. There is no discomfort in walking; some fatigue with reading, unless position of the book is well in front and on a level with eyes.

There is no pathology of the globe or contents evident except a dilated pupil which reacts only slightly to light and accommodation. It contracts to 2 mm. under a myotic. Form and color fields are full normal and there

is no enlargement of the blind spot. There is no deficiency in the muscles of the lids or face around the orbit, and no loss of sensation in skin. There have been no headaches that persisted.

Judging from the X-ray the tube, 4.5 mm. outside diameter and 6.9 cm. long, traversed the orbit along the upper median wall, passed the superior oblique, thru the cone of attachment of the recti, below the optic nerve and ophthalmic artery. In passing thru the sphenoidal fissure the tube may have broken away some of the bone. It seems incredible that no greater damage was done to the structures passing thru this slit. The 3rd, 4th or 6th, or branches of ophthalmic division of 5th, may have been injured but not completely severed. The orbital branch of the middle meningeal artery and the ophthalmic vein must have been spared. There was no evidence of severe bleeding into the orbit.

Inside the skull the tube went lateral to the carotid and the 5th cranial nerve; possibly penetrated or grooved the under, median part of the temporal lobe, and came to rest against the anterior portion of the temporal bone near the hiatus Falopii.

31 N. State St.

BILATERAL PTOSIS CURED BY A HUNT-TANSLEY OPERATION.

CLARENCE LOEB, M.D.

CHICAGO, ILL.

Congenital ptosis with defective superior recti, but good action of the occipitofrontalis indicated this operation. The result was good, and in a similar case such a result had continued after two years. Read before the Chicago Ophthalmological Society, October 18, 1926. See p. 205.

The case which I have presented tonight, is that of a young girl, T. G., age 11, who consulted me on July 22, 1926, on account of drooping eyelids, which had been present from birth. She complained that the other school children made fun of her, and wanted an operation for cosmetic reasons. She presented the typical picture of bilateral, congenital, ptosis—head thrown back and upper lids covering the upper part of the pupils, with absence of wrinkling of the cutaneous surface of the lids. There was no movement upwards of either lid, even on extreme

effort and when accompanied by the action of the occipitofrontalis. The latter, however, functioned normally. There was no movement upwards of the eyes until the upper lids were elevated by me, when they could be raised voluntarily slightly above the horizontal plane. All other ocular movements were normal. There was a low degree of exophoria. V. O. U. = 6/10.

As it was evident that the superior rectus did not function normally, and was probably paretic or atrophic, and as the action of the occipitofrontalis

was very good, I decided to use the Hunt-Tansley procedure, an operation from which I have always obtained good results. This was performed under a general anesthetic, on July 27, and the result in the left eye was perfect from the beginning. The

movement of the lid is good, and the size of the palpebral orifice corresponds to that of the other eye; but there is a slight puckering of the entrance to the tunnel, which, however, is hardly noticeable.

There is one, theoretic, objection to



Fig. 1.

Congenital ptosis. Fig. 1 at six years. Fig. 2 at 10 years.



Fig. 2.

right eye, however, was slightly undercorrected. During the course of the healing, a discharge appeared from the tunnel, thru which the flap passed to be attached to the occipitofrontalis. This quickly yielded to applications of silver nitrate and yellow oxid of mercury ointment. Its healing led to a slight contraction of the tissues, which raised the lid just enough to make the two palpebral orifices of the same size. As you can see, the movements of the lids are good, and the cosmetic result, especially when she wears her glasses, is perfect.

Unfortunately, I did not have a picture taken just before the operation, but I have here a photograph of the patient at the age of 6, and one at the age of 10, which you may compare with one taken 2 weeks ago.

Two years ago, I showed a case of unilateral congenital ptosis operated by this method. (A. J. O. v. 7, p. 216.) This patient presented herself the other day for reexamination. The

this operation, and that is, that we might expect to have trouble from the buried skin flap, something in the na-



Fig. 3.—Result of Hunt-Tansley operation.

ture of a cholesteatoma or cyst. But nothing of the kind has appeared in this patient in over two years, nor have any untoward results been reported in the literature.
25 E. Washington St.

NOTES, CASES, INSTRUMENTS

A NEW LACRIMAL SYRINGE.

ERNEST E. MADDOX.

BOURNEMOUTH, ENGLAND.

It is sometimes desirable to pass stronger medicaments straight into the lacrimal sac, or duct, than we like to have touch the conjunctiva. This is not easy to ensure with an ordinary all-glass syringe that works easily, for when the barrel is held more or less vertically, the contents are apt to escape prematurely drop by drop, owing to the weight of the plunger.

I have therefore had a syringe made with a fine wire spring to keep the plunger from falling, while, at the

might be useful. The instrument is made by Messrs. John Weiss & Son, Ltd., of 287 Oxford Street, London, W.

DYSTROPHIC INTRACELLULAR OPACITY OF CORNEAL EPITHELIUM.

F. HERBERT HAESSLER,

MILWAUKEE, WIS.

Read before the Chicago Ophthalmological Society, October 19, 1926. See p. 202.

A white male, aged 29 years, was seen in August, 1924, with a superficial opacity of the left cornea, which had appeared three months previously and



Fig. 1.—Improved lacrimal syringe (Maddox.)

same time, a pleasanter grip for the fingers is supplied by means of two glass disc-rims or flanges, between which the first and second fingers rest. The position of these (about the middle of the barrel) provides a very perfect control of the instrument, which can also be rotated as required.

After drawing the required amount of liquid into the syringe, the spring-held plunger enables the point of the canula to be wiped dry and remain so until its insertion into the canaliculus. Should an overdose be inadvertently given and superfluous liquid begin to overflow from the punctum, the pressure of the thumb on the plunger can be instantly lessened to let the canula pick up any liquid before it touches the eyeball.

It is important that the plunger should be well "ground in" so as to rise smoothly when the spring acts on it. The spring is removable if required, or can be made interchangeable with a weaker or stronger one. For the consulting room, a little box of springs of different lengths and sizes

had not responded to ointments and drops. At the first examination the opacity appeared as a very superficial, avascular, clubshaped area of ground glass, in an otherwise clear window, covering the pupillary area and meeting the limbus at 10 o'clock. In the affected area the sensitivity to tactile stimuli was decreased. Staining with fluorescein was never unequivocal. The vision was 20/200. At a previous examination, in 1920, the vision was better than 20/25 and objectively appeared normal. The right eye has been practically blind since the patient's sixth year, is highly myopic and its posterior pole is involved in a large chorioretinal scar.

Very careful and complete general physical examination, including chemical and serologic studies of the blood, revealed no abnormality, except a few questionable teeth, which were extracted. For nearly a year medical treatment, such as dionin, thiosinamin and hot compresses, was tried in vain. In an area which had been scraped the

regenerated epithelium was again opaque.

It was then decided to cautiously treat a small area with the thermophore. With blindness of the fellow eye, it took courage on the part of the patient as well as the oculist to attempt a form of treatment, which might stimulate this lesion of unknown nature to increased severity.

Previous to heat treatment a careful slitlamp study was made, and the characteristics which were seen led to the conclusion that the lesion was an intracellular opacity of the corneal epithelium, which did not change the size of the individual cells. The opacity was granular, very slightly yellowish and quite homogeneous to the very edge, which was very sharply defined. The limiting light bands of epithelium and stroma were regularly curved and not displaced. There was no gross vacuolization. The corneal stroma and its nerves and the mosaic of the endothelium were entirely normal throughout.

One application of the thermophore, at 135° F. for one minute, cleared the area treated within twenty-four hours. Repeated applications at four to seven day intervals cleared the entire area; tho it was not always precisely the area with which the thermophore had been in contact, nor the whole of the area, which became clear. After complete treatment the eye became objectively normal and the vision 20/20, with ability to read the finest type near at hand. It has remained normal for ten months.

The pathologic histology and pathogenesis of the lesion can only be surmised. A probable explanation is that the opacity is due to the retention of a product resulting from slowed or perverted metabolism. The application of heat stimulated the intracellular chemical processes to change the product in question to a transparent one, or to destroy it. The seat of stimulation is probably beneath the epithelium.

The epithelium that was scraped away was merely replaced by equally defective cells. In the course of a year epithelium must be cast off from the

surface; and in this case, apparently, the new cells became cloudy in the affected zone and clear in the healthy area of the cornea. Unfortunately the epithelium scraped off early in the course of the disease was not subjected to microchemical or histologic study.

120 Wisconsin St.

TEMPORARY ANISOCORIA IN A LEPROSY PATIENT.

B. N. BHADURI, M.B.

CALCUTTA, INDIA.

There is no mention of anisocoria in leprosy in the literature. In the case described, temporary dilatation of the left pupil was observed, which persisted for two to three months after recognition, in an early case of cutaneous leprosy. It is not known whether the symptom started with the beginning of sensory disturbance, as the patient consulted me three months after the appearance of skin lesions.

Mr. M. S., a Hindu male, forty-five years old, with a diagnosis of leprosy by the pathologist, was sent to me for correction of error of refraction. First sensory disturbance was noticed in the face three months ago. The skin about the right supraorbital region is red, slightly raised and anesthetic, whereas on the left side in the same situation it is red, no elevation could be recognized, and highly hyperesthetic, the hyperesthesia extending down to the neck. There is no swelling of the glands in the body. No thickening of nerves that could be felt. The sensation anomaly was present only in face and neck, the extremities being free from it. The patient complained of supraorbital pain. Wassermann reaction of blood was negative.

The only change in the eyes was inequality of the pupils, the left one dilated. They were reacting to light reaction. Adapted width of the pupil of the right eye, about 3.5 mm. and of the left, about 6 mm. (The pupils were exposed to clear daylight, coming thru a large window about 1 meter distance, and measured with a simple pupillometer.)

arently, the af-
healthy
ely the
in the
jected
dy.

Refraction: Right eye 6/6 Hm. nil and with 1.50 D. sp=Sn. .5 at 12 inches. Left eye the same. Tension, visual field and fundus oculi are normal in both eyes.

At first sight one would naturally expect extraneous dilatation thru mydri-

atics, but on enquiries this proved negative. Subsequent equality of pupils, after two months, dismissed the possibility of a nonpathologic variety. We know of anisocoria in sensory disturbances in syringomyelia.

10A, Wellington St.

SOCIETY PROCEEDINGS

COLLEGE OF PHYSICIANS, PHILADELPHIA.

Section on Ophthalmology.

November 18, 1926.

DR. EDWARD A. SHUMWAY, Chairman.
Sarcoma of the Iris.

DR. WILLIAM ZENTMAYER exhibited a boy, aged 10 years, with iris tumor, referred by Dr. Calvin Rush. He was first seen November 1, 1926. The history was that for the previous four months a small, pinkish growth had been noticed over the colored part of the left eye. This had been slowly increasing in size. There was no history of injury or recent inflammation.

In the left eye there is a flesh colored tumor about $3\frac{1}{2} \times 4$ mm. in size. It is smooth and ovoid, and rests on the surface of the iris at the small circle, and projects into pupillary space. Fine blood vessels are seen ramifying on the anterior surface of the growth. The iris reacts to light except the part on which the growth rests. The vision is 5/5.

With the slit lamp, the growth is somewhat translucent, but not cystic. The surface is covered with ramifying vessels coming from the surface of the iris. The vessels on the iris tissue are much larger and more tortuous than those on the growth proper. There is an irregular attachment of the tumor to the iris by means of several strands of pale, pinkish-white tissue which is also vascular. No precipitates are seen either on Descemet's membrane or on the anterior capsule of the lens.

The diagnosis is probable lymphosarcoma of the iris.

These growths appear as early as the second, and as late as the 75th year. They are, as a rule, pigmented, of slow

growth and not accompanied by inflammation until a late stage. There may be hemorrhage into the anterior chamber. The diagnosis rests upon the non-inflammatory, slow growth, the flesh color, the vascularity and rounded form, and the position on the iris at the smaller circle.

Gumma is usually accompanied by iritis and other syphilitic symptoms. It is rust colored or yellowish-white. There is frequently hypopion, and the growth is often peripherally situated.

Tubercle is generally accompanied by mild inflammatory symptoms, is yellowish-white or greyish-white in color, is of rapid growth, and located most frequently on the smaller circle. There is hypopion occasionally.

There are probably less than one hundred cases of sarcoma of the iris on record. Ball states that cures have been obtained by iridectomy and removal of the mass by Veasey, Arlt, Kipp, Knapp and others. Casey Wood, Brown Pusey and Ball believe that enucleation should be done as soon as the diagnosis is made.

In this case it is proposed to attempt the removal of the tumor by iridectomy, using either the keratome and enlarging the incision by the scissors, or by using the Graefe knife, taking care in either case not to cut the growth with the instrument for fear of disseminating the tumor cells.

Dr. Zentmayer expressed his indebtedness to Dr. J. S. Shipman, of the Reed Resident Staff of the Wills Hospital for the excellent color sketches which he had made.

Traumatic Enophthalmos.

DR. C. R. HEED exhibited a man, aged 27 years, who entered the Jefferson Hospital with enophthalmos which followed a direct concussion of the right eye by

a stream of water from a fire hose. While there was edema and discoloration of the lids, a subconjunctival hemorrhage and a small laceration of the conjunctiva, there was no evidence of a rupture of the globe. The cornea was clear, the anterior chamber of normal depth, the tension normal and the pupil round, 5 mm., and did not react to direct light. There was marked recession of the eyeball, the Hertel instrument recorded 7 mm. and the left eye 16 mm. Upon discharge from the hospital, ten days after the injury, the vision of the right eye was 6/7.5; left eye 6/5; rotations showed marked impairment downward, inward and outward, and no perceptible movement upward. The eyegrounds were normal.

Dr. Heed said that the mechanism of enophthalmos following penetration wounds was different from that where the condition followed severe blows on or in the region of the eye, with no apparent evidence of orbital fracture or signs of inflammation. The explanation of the latter cases has been variously stated as due to vasomotor disturbance, trophic changes affecting Tenon's capsule or Mueller's muscle, atrophy of the orbital fat, or palsy of the sympathetic nerves.

The supporting structures holding the globe in position have been given as trabeculae from the periosteum to Tenon's capsule and the check ligaments. No prominent mention has been given to the oblique muscles with their aponeurosis as factors in this connection, yet one must concede such a function when considering the course of these muscles. Both are held anteriorly to the orbital rim and pass backward to be inserted into the sclera back of the equator.

The initial cause of the enophthalmos in this case has been assumed to be a rupture of the supporting trabeculae and a probable separation of the tendon of the inferior oblique, with vasomotor disturbances which resulted in evacuation of the orbital vessels.

Sarcoid of Eye Lids.

DR. LOUIS LEHRFELD read a paper on this subject which will be published in this Journal.

Discussion. DR. S. S. GREENBAUM pointed out that the term sarcoid was

adopted originally by Kaposi, and is used to designate lesions resembling sarcoma clinically; but they do not recur *in situ* when removed as does sarcoma, nor do they ulcerate or metastasize. The lesions occur in the form of tubercles, nodes, and are usually multiple and painless. They may disappear spontaneously or following the use of arsenic, mercury, tuberculin, etc. Their histologic structure is often tubercloid. Several clinical types are described.

1. Cutaneous sarcoids or lupoids of Beck.
2. Hypodermic sarcoids of Darier-Roussy.
3. Disseminated nodular or dermic sarcoids.

The exact nature of sarcoids is not known; in some, it is tuberculosis, in others syphilis, and in others a different infection.

DR. EDWARD A. SHUMWAY said that in the case reported by Derby and Verhoeff, the growth on the eyelid had been excised and had recurred. The condition is very uncommon, so that oculists have very little experience with it clinically. According to Hartzell, tuberculosis is present in about one-third of the cases, and the fact that it is improved by the administration of arsenic does not, of course, prove that it is syphilitic in origin, as many skin lesions are greatly improved by arsenicals.

In the differentiation of sarcoid from lepra, syphilis, or the nodular form of erythematous lupus, with which it might be confused, Hartzell says that the absence of ulceration and the presence of fine yellowish points in the sarcoid were important. The latter could be best brought out by pressure with a glass slide.

Epithelioma of Eyelid.

DR. S. S. GREENBAUM presented the report of a child four years old, the son of first cousins. The parents noted during the first year of life, an increasing freckled appearance of the facial skin. Gradually there developed here and there upon the skin hard concretions which frequently dropped off spontaneously but just as frequently recurred. About six months before he saw the child, one of these hard masses on the lower eyelid became ulcerated; the ulceration failed

to heal and progressively enlarged. Histologic examination showed a squamous cell cancer.

Diagnosis was xeroderma pigmentosum with malignancy.

About 110 cases of this condition have been reported. It usually begins during the first or second year of life, almost always during the summer and sometimes very shortly after a single exposure to direct strong sunlight. There is,

wise thought that there is a congenital hypersusceptibility to the actinic rays of the sun.

The patient was presented before the Section because of the presence of the squamous cell cancer of the eyelid, and to invite discussion on the etiology of the photophobia. Photodynamic sensitization or light sensitization has been known for years. Recent research appears to indicate that there are at least two photo-



Fig. 1.—Xeroderma pigmentosum with epithelioma of lower lid and prickle cell cancer of the palpebral conjunctiva. Note generalized freckling of face; lids closed because of marked photophobia.

first, a dryness of the skin, with progressive development of freckle like lesions, which, however, are much darker than ordinary freckles. The exposed surfaces are the parts mainly involved. Slowly there develop small, white, atrophic areas on the skin, with telangiectases and keratoses. These keratoses usually after a time undergo malignant degeneration. The following eye disturbances are found in this condition: Ectropion, due to the atrophic lesions on the eyelids; photophobia, with lacrimation; interstitial keratitis; corneal nodules and opacities.

The exact cause of xeroderma pigmentosum is not known, but it is known to be common in children born of a consanguineous marriage and it is like-

sensitizing substances in the cells or the circulating blood of the capillaries, responsible for the clinical manifestations. According to Harris and Hoyt, it is the amino-acids of the proteins which act as the sensitizers. It is not at all unlikely that these when present in excessive amount in the skin, are likewise present in excessive amount in the exposed surfaces of the eye, that is, in the conjunctival capillaries and the lymph spaces of the cornea. It is interesting to note that the photophobia was made distinctly worse following the local injection of mercurochrome. The explanation for this would appear to be that mercurochrome is a compound containing fluorescein, which itself is photodynamic.

Medullated Nerve Fibers.

DR. A. G. FEWELL exhibited a case of medullated nerve fibers which was seen in the Eye Clinic of the University of Pennsylvania. The patient was a colored boy, aged 20. There were no other congenital defects present except the one here reported.

The case was shown because of the unusual situation of the medullated fibers in the left eye. It is an excellent example of the arcuate distribution of the nerve fibers on the temporal side of the retina. The fibers are nonmedullated as they leave the disc, becoming medullated a short distance up and to the temporal side. They then pass out toward the temporal periphery, arching above the macula. They lose their medullation in places as they spread out, but can be traced outward and in part end on the median raphe. This area is interpreted in the field by a comet shaped relative scotoma which runs into a cut in the lower nasal quadrant. The blind spot is slightly enlarged laterally. The vision with correction is O. D. 6/6; O. S. 6/6?

Discussion. DR. LUTHER C. PETER said that Dr. Fewell's case presented a very interesting picture. He was much interested to know whether Dr. Fewell had been able to find any areas of absolute scotomata in the denser opaque nerve fibers. Up to the present time, the scotoma found has been relative in type. It is probable that, if the form test object were reduced to standard—a minute angle of probably 10 minutes—absolute areas might be detected in parts of the distribution of these nerve fibers.

DR. WM. ZENTMAYER said that the question of the scotoma in connection with the medullated nerve fibers had been thoroly discussed by Grable a few years ago. He found that there was no close agreement between the ophthalmoscopic and the field findings. He, therefore, considered the term opaque fibers a misnomer. It would seem to Dr. Zentmayer that this term was applied to them from the viewpoint of the observer and not the patient. They certainly appear opaque.

A point brought forward by von Hippel and Oppenheim, that they occur relatively frequently along with other

stigmas of degeneration in physically abnormal people, he had been unable to confirm.

Surgery of Senile Cataract Complicated by Glaucoma.

DR. LUTHER C. PETER submitted a series of 26 representative cases for discussion. In the first group of 10 cases, 5 had hypermature cataract complicated by glaucoma, and 5 were mature. Five extractions in capsule yielded 2 good results, 2 fair or surgically satisfactory, and one poor. Five extractions by capsulotomy yielded one good result, one fair, and 3 unsatisfactory. In the total of 10 cases, all recorded as poor were cases of primary glaucoma. Out of 3 of these, the glaucoma was subsequently controlled in 2 instances by cyclodialysis, and in one by sclerocorneal trephining. The final results were, 5 good, 4 fair, and 1 poor.

In the second series of incipient cataract with primary glaucoma, 11 cases were trephined, with 11 good results. Three were treated by cyclodialysis, with good results in two, and fair in one. One iridectomy yielded poor results. The sixteenth case was one of complicated cataract and secondary glaucoma following uveitis, in which an iridectomy arrested the process.

One of the points of special interest is the frequency of this dual condition in the same eye. This is to be expected in primary glaucoma because of the chronicity of the disease accompanied by lowered ocular nutrition and probably, in most cases, by a subsequent low grade uveal disease. In mature and hypermature cataract, the incidence of secondary glaucoma is conditioned upon increasing lens toxicity and mechanical blocking of the angle. The latter factor probably is the more important.

Concerning general management, as a prophylactic measure, it is advisable to operate upon a mature cataract even tho the vision in the fellow eye is good. It is the logical and only safe measure to prevent the development of secondary glaucoma.

Primary glaucoma complicated by incipient cataract is best controlled by sclerocorneal trephining. Iridectomies are of less value, first because they fail

too often in uncomplicated cases of glaucoma. Second, the added danger of blocking of the angle by the swelling lens almost surely demands a third operation, after the extraction of the lens, to insure the control of the glaucoma. Third, after the lens is extracted, the upper angle is apt to be blocked by capsule or iris tags, inflammatory or lens debris. If the cataract is well advanced and extraction near at hand, an iridectomy may be practiced with the expectation of a cyclodialysis or trephining after the lens is extracted.

Mature and hypermature cataracts should be extracted in capsule when possible. Extraction by capsulotomy is less satisfactory. The technic recommended for intracapsular extraction is by Kalt forceps combined with gentle pressure over the lower part of the cornea by a Smith hook. Extraction in capsule is more apt to arrest secondary, than primary glaucoma.

Residual glaucoma, or glaucoma after extraction of the lens, if the hyaloid is intact, may be arrested by trephining or by cyclodialysis. The trephine opening should not be placed in the area of the iris coloboma, nor yet in the neighborhood of the cataract incision, but in the lower limbus, or where the anterior chamber is deepest. Cyclodialysis has yielded satisfactory results in three of the author's cases.

Discussion. DR. P. N. K. SCHWENK expressed his appreciation of Dr. Peter's paper but asked if Dr. Peter had ever tried the triple operation of, first, posterior sclerotomy; second, iridectomy; and third, extraction of cataract at one and the same time?

He cited a case that came to him at Will's Hospital about ten years ago, in which a colored woman came to him with inflammatory glaucoma, with no light perception, suffering intense pain. In consultation with his then colleague, Dr. Wisher, it was decided to admit the patient to the hospital for an iridectomy; but, instead, he did a posterior sclerotomy, iridectomy and lens extraction, all at the same time. This was done under general anesthesia. A roller bandage was applied, with instructions not to open the eye for three days. She made an uneventful recovery. She

came back in six months with eye quiet, and to his surprise, had 20/30 vision. Later, he did several others, but without visual results. This method gives a complete relief of tension.

After replying to Dr. Schwenk, Dr. Peter stated that he had not practiced Dr. Schwenk's procedure in exactly the same manner as he had suggested. It is, however, a logical procedure, and would undoubtedly render the iridectomy and extraction of the lens safer than without this measure.

The question of cyclodialysis is as yet *sub judice*. In clinics, such as those in Vienna where the procedure is largely practiced and well thought of, the percentage of successes claimed for the operation is rather low. It has seemed to him, however, that we have not selected our patients with sufficient care for the application of this operation. The lowered tension which follows a cyclodialysis is not due to suprachoroidal drainage, but to the opening up of the canal of Schlemm. The suprachoroidal space is walled off quite early. It would be impossible, therefore, to expect a cyclodialysis to be of any great value in inflammatory cases, cases in which the canal of Schlemm is closed as the result of inflammatory process. It is more likely that the operation will succeed in the noninflammatory types in which the blocking is more or less of a mechanical character. It is quite probable that if greater care is exercised in the future in the proper selection of the cases for cyclodialysis, the value of this surgical procedure may receive a better rating.

Ocular Fields in Syphilis: Retino-Choroiditis in Early Tabes.

DR. WM. F. BONNER (by invitation) discussed ocular field changes in syphilis, and exhibited a patient showing retino-choroiditis in early tabes. In discussing the patient he said the annular scotomas show the amount of intraocular disturbance; the fields for form and color suggest the intraocular lesion. Neurologic examination shows early tabes. The last examination of the fields showed increase of intraocular and intracranial lesions.

Discussion. DR. WM. ZENTMAYER said that the most striking feature in the fundi of Dr. Bonner's patient is the

sclerosis of the choroidal circulation. The areas of choroiditis are inconspicuous and there are numerous cholesterin crystals scattered about the fundus. It is probable that the choroidal sclerosis is the essential feature and better explains the ring scotoma than do the areas of choroidal atrophy.

He stated that he was not taking exception to Dr. Bonner's diagnosis as this seemed unfair when he has had the opportunity to study the case thoroly, whereas we have had an opportunity for only a hasty glance.

DR. LUTHER C. PETER said that the presence of interlacing of color fields in clinical work indicates one of three things: First, it may be an artefact; second, it may be indicative of hysteria; and third, it may be indicative of choroidal disturbance. If the interlacing is between red and green, the findings should usually be regarded as artefacts, or as evidence of hysteria. If the interlacing is between red and blue, the possibility of choroidal disturbance should receive very careful consideration.

Dr. Peter said he did not have the privilege of seeing either Dr. Bonner's patient or the fields, but it was probable that interlacing of the color fields of which he speaks may be evidence of choroidal involvement to which Dr. Zentmayer has referred.

LEIGHTON F. APPLEMAN,
Clerk.

CHICAGO OPHTHALMOLOG- ICAL SOCIETY.

October 18, 1926.

DR. EDWIN J. GARDNER, Presiding.
Tumor of the Orbit in a Child.

DR. SOPER said the child was four years old. The symptoms began one year ago in October when the mother noticed that the right eye looked a little peculiar, resembling a cat's eye, and first consulted a physician in January when the child became ill generally and was vomiting. This doctor stated that there was a round tumor which filled the anterior chamber and contained blood vessels. Another doctor diagnosticated a glioma and made an enucleation, taking as

much of the optic nerve as possible. The socket drained intermittently for a number of months, from January to July or August. In August she began having vomiting spells and a tumor mass appeared in the orbit. The child was brought to the Cook County Hospital on September 1st on the service of Dr. Suker. She was very thin, vomiting everything she ate, and had lost considerable weight. There was a bulging mass, rather firm, and larger than a hen's egg in the right orbital cavity. A small section was removed for study. Five weeks ago the orbit was eviscerated by Dr. Suker, assisted by Dr. Dowd. As the tumor was encapsulated, the palpebral conjunctiva and lids were saved, thus preserving a small socket for an artificial eye. There have been no recurrences to date, and no enlarged glands in the neck. The child has gained perhaps ten to twelve pounds in the last month.

The sections of the specimen show it to be a sarcoma.

Traumatic Iridocyclitis.

DR. SHAPIRO presented P. R., laborer, aged 16, who entered Cook County Hospital, Oct. 12, 1925, complaining of loss of vision in the left eye of two days' duration. Six years previously while playing, a piece of wood struck the right eye, necessitating its immediate removal. Two days ago while upholstering a chair a tack flew into the left eye. The pain was severe and on the following morning he had only light perception.

There was a small scar in the left cornea. The conjunctiva was injected. Some exudate in the anterior chamber was present. The iris was muddy in appearance. The posterior media could not be examined. The urine was negative. A diagnosis of traumatic iridocyclitis was made and treatment instituted, consisting of injections of atropin and adrenalin, foreign protein and sweat baths and hot compresses of magnesium sulphate.

On December 11th an iridectomy was done in the upper quadrant. At this time the vision was limited to light perception. Examination revealed a very small pupil. The lens had been

absorbed and the iris was drawn point upward. The urine showed sugar 3+, whereupon the patient was transferred to the medical service for diabetic treatment.

He returned three months later, at which time vision showed light perception. Two weeks later a second iridectomy was performed. On September 3rd, the patient could count fingers. On September 10th, a capsulectomy was made. As much of the membrane as could be removed without hemorrhage was taken out. On September 23rd, he could read letters in the seventh line at three feet distance. At present with correction he can count fingers rapidly and can read four letters of the tenth line three feet away. This is considerable improvement from the original light perception and projection only.

The whole nature and character of the inflammation was one that obtains in sympathetic ophthalmia, and no doubt, had the right eye been present, would have developed a sympathetic inflammation from this injured left.

Discussion on Case Reports of Drs. Soper and Shapiro.

DR. G. F. SUKER said, the child with a tumor is to my mind a very interesting case from the pathologic standpoint of tumor formation. I maintain from my observations and experience that all intraocular tumors in children are nonpigmented; be they congenital or not they are nonpigmented up to about puberty but become pigmented as the child grows older; second, that the metastases of the tumor depend upon its melanin formation, the less melanin there is the less likely are metastases. The metastases also depend on the location of the tumor within the globe, whether it is near or within the venae vorticoseae of the choroid or whether it is near the optic nerve entrance. If there is an optic conus or staphyloma and the tumor is impinging upon the edge of either, metastases often appear early. Fortunately all the intraocular tumors in these infants are of the sarcomatous type, and relatively free from melanin, and show little tendency for generalized or local metastasis. Therefore,

the prognosis of this little child is very good.

The eye was first removed for a supposed glioma of the retina. I question this diagnosis for several reasons. An extrabulbar glioma is not encapsulated. Furthermore, we cannot assume that cells migrating thru the sclera will change their gliomatous characteristics and become a round cell sarcoma, tho glioma and sarcoma are closely related. It is not characteristic of glioma to be so avascular as this tumor. Therefore, the entire picture to my mind resolves itself into one of a small cell sarcoma, which was located within the choroid and metastasized into the orbit by way of vessels or lymph channels. The child does not show any evidence of meningeal involvement and there was no glial tissue formation. I believe, in addition, were it a glioma located along the optic nerve sheath that there would certainly be meningeal complications. We thought them present because of the vomiting but this ceased after the evisceration of the orbit and since then the child has increased in weight. Roentgen ray treatments are being given.

There is one particular point in the operation of evisceration about which I wish to advise, that is, not to implant the lids into the orbit but to unite the conjunctiva back of the tarsal folds so as to have a socket in which to insert a prosthesis. With part of the periosteum left within the orbit and the lids brought down over this, a good socket will be formed and later an artificial eye can be inserted. This can be safely done when orbital tumors are encapsulated.

DR. G. W. MAHONEY said some years ago a child of five years was brought to me because the mother had noticed something peculiar about the right eyeball. On examination I found a growth within the eyeball. It looked like a glioma, but I was not sure. I advised removal of the eye. I removed the eye, taking as much of the optic nerve as possible. The child altho emaciated and anemic made a very prompt recovery, and in a very short time had gained some ten or twelve pounds and was apparently very well.

About eight months later the mother brought the child back because the other eye looked peculiar. On examination I found a growth in the left eye. Because the right eye had been removed, I advised against removal of the left eye unless the pain became intolerable. Within two or three weeks I was called to the house to see the child. I found him dying of meningitis. The growth in the second eye looked exactly like the one in the eye originally involved, so I did not think there was any question that the growth had followed the tract of the optic nerve, resulting in a secondary growth in the other eye. At any rate, the meninges were involved and the child died eight months after the first eye was removed. Microscopic examination of the tumor removed showed it to be a sarcoma. My belief is that the outlook in these cases is very poor.

DR. MICHAEL GOLDENBURG said I want to emphasize one point Dr. Suker made about the apparent well being and increase in weight. That is not uncommon. I wish to cite a case of a child who had a tumor which penetrated the optic nerve. The eye was removed and the child was given large doses of radium over a long period. We kept the child in the hospital for quite a while, then we sent him home apparently well. Several months later, we received a letter from the doctor in his home city stating that a new growth had appeared and was protruding far out. He asked for information as to what to do. I am not too hopeful of malignant neoplasms in children, in the eyeball. If we are able to remove the tumor before it has penetrated or ruptured the sclera there is some chance, but when it goes beyond that, I am very doubtful if we save any. We have tried surgical diathermy of late; in some cases that seems to offer some hope, but the cases are not old enough to warrant any optimistic deduction.

Dystrophic Intracellular Opacity of Corneal Epithelium.

DR. F. HERBERT HAESSLER presented a paper on this subject published on page 193 of this JOURNAL.

Discussion. DR. ROBERT VON DER HEYDT said, In a steaming of the cornea, whether general, as in glaucoma or localized, we have a dewlike infiltration of the epithelium plus a swelling or dropsy of many of the individual cells. These two changes are proven by the variation in the sizes of the droplets. A very slight epithelial change of this type may produce quite a clouding because of the decided differences in the refractive indices within the altered tissues. The therapeutic results in this case are quite astounding. They almost nullify the importance of a differential diagnosis. The latter in my mind would rest between that of an epithelial dystrophy and a late very mild manifestation of hereditary interstitial keratitis. I have seen some very pronounced cases of the latter, which gave a plus Wassermann, and have remained absolutely avascular throughout their course.

DR. HARRY GRADLE said it would seem to me that Dr. Haessler describes a definitely new condition that has never been reported in the literature as far as I know. As for confusing it with Fuchs' dystrophy, I do not think there ought to be much question of differentiation. As for interstitial keratitis, I believe that none of us can say we have seen interstitial keratitis of this type, a superficial affair and practically without vascularization. Keratitis parenchymatosa is something entirely different. Furthermore, none of these conditions will respond to heat. It would appear that Dr. Haessler has an entirely different condition, probably on a circulatory basis in which the responses to therapeutic measures instituted are quite prompt. It would seem that the name, dystrophic intracellular opacity is quite characteristic and the one we should really adopt for this condition.

DR. W. H. WILDER said I have never seen a case like the very interesting one reported. It may be an allied form of the epithelial dystrophy described by Fuchs, in which the most pronounced change is in the roughened epithelium, but in which the superficial laminae of the cornea propria are also involved. I have seen two cases of

dystrophy similar to that described by Fuchs following successful cataract extraction in which healing of the wound was uncomplicated and in which no signs of glaucoma developed. These were not the lattice or striate opacities coming on soon after the operation, frequently caused by wrinkling, but they came on two or three weeks after the healing, in the upper and central area of the cornea, where the epithelium seemed to be disturbed and the substance of the cornea seemed to be invaded. The result was unfortunate for the patient as the vision was seriously impaired.

In this case reported here the diseased condition was probably entirely in the epithelium above Bowman's membrane.

The remarkable therapeutic results would seem to indicate the truth of that because were it a lesion in the cornea propria we should hardly expect to get such a beautiful clearing of the opacity.

Orbital Wound Penetrating Middle Fossa.

DR. EARLE B. FOWLER presented a paper on this subject published on page 190 of this JOURNAL.

Discussion. DR. W. H. WILDER said, I had the pleasure of seeing this remarkable case of Dr. Fowler's and assisting in the operation of removal of the glass tube from the orbit. An incision into the orbit fully two centimeters deep was necessary to expose the anterior end of the tube. An interesting feature was that the end which penetrated the orbit was the blunt or rounded end of the tube, the fractured end presenting forward. It was remarkable that there was enough force to drive this blunt glass tube thru the skin and fascia and clear back thru the superior orbital fissure. There was some doubt in our minds as to whether it would be possible to extract it readily, for it might have become attached to the structures around the cavernous sinus and in attempting to draw it out there was the chance of injury to the wall of the sinus, which might result disastrously. However, when it was finally seized, it slipped

out very readily and smoothly, much to the gratification of Dr. Fowler and his assistants. There was scarcely any hemorrhage. There was an escape of some clear fluid from the wound which we took to be cerebrospinal fluid, but no hemorrhage other than that resulting from the dissection necessary to locate it.

The lesson to be learned from a case of this kind is that too often thru an apparently trivial injury of the orbit or of the lids or conjunctiva large foreign bodies pass into the orbit and remain there. Years ago in producing a paper on foreign bodies in the orbit I found the literature of the subject contained an astonishing number of cases, thirty-five or forty, in which the breech pin of a shot gun had entered and lodged in the orbit thru a comparatively trivial external wound that did not betray the severity of the injury. Some of these recovered after removal of the body and many, in which the brain was injured, died. The breech pin of a muzzle loading shot gun, as you know, was fully three inches long. I had a case in my clinic of a boy who while rolling a hoop along the sidewalk fell and scratched his face. He went to a surgeon, who cleaned him up and thought it was only a mere scratch and made light of it. A discharge continued from the conjunctiva for some time and finally he came to my service. On drawing the lid down I could see a little pouting granulation in the inferior cul de sac, which on probing proved to be at the entrance of a small but deep sinus at the bottom of which I thought I could detect a foreign substance. He was anesthetized, the opening was enlarged and with forceps I removed a jagged splinter of wood, the end of which must have been near the apex of the orbit. It was about one and one-half inches long and at least one-fourth inch in diameter and tapering to a blunt point. The wound healed very promptly.

Another case of a similar kind was a man who going thru a forest had struck his face against a twig, scratching the conjunctiva. It was made light of by two physicians he had seen, one of them a specialist, who later

opened a small abscess in the upper lid. This did not heal and thru the small opening there continued to escape at times a little purulent fluid. Careful exploration of the sinus with a probe revealed a foreign substance above and back of the eyeball. Thru a suitable incision I removed a piece of twig nearly an inch long and a quarter of an inch in diameter. No serious damage had been done and the wound healed promptly. So, I think it is very important in any comparatively trifling injury of the lids or orbit to make a very careful examination to see if there is any possibility of the presence of some foreign substance. In these days of roentgen ray examination we get the information provided the object is opaque to the roentgen ray.

DR. HARRY GRADLE said I have a case somewhat similar to Dr. Fowler's that happened four years ago this coming December. I was called to the hospital in the evening to see a woman who had just been injured in an automobile accident, having gone thru the windshield head first. She had numerous cuts on her face and a large cut over the upper lid. It was impossible to lift the lid to observe the eye. Thru the palpebral fissure the eye appeared to be badly cut and collapsed. She was put under general anesthesia immediately and upon probing into the wound thru the upper lid something seemed to click and the eye snapped back into its normal shape. Then the probing was continued and the foreign body could be felt behind the eyeball in the orbit. The wound was enlarged and there was felt a foreign body which was evidently glass. It slipped back entirely beyond the grasp of the forceps. Upon enlarging the opening there was removed a small table of bone about the size of the thumbnail. It was believed that this was the roof of the orbit. Following this a large amount of brain cortex appeared. That was removed. We were forced to use our fingers in removing the foreign body. It had penetrated into the cranial cavity. Upon removing it, it was found to be a piece of the windshield, $3\frac{1}{2}$ cm. x $1\frac{1}{2}$ cm., and of the thickness of heavy windshield glass. I left town that night and came back

two days later expecting to find the woman with a meningitis if not dead. But nothing happened. About three months ago I saw the patient. There was a depressed scar of the upper lid at the line of incision. The vision of the eye was absolutely normal; in other words, we had a penetrating injury thru the upper lid, with a piece of glass lodging in the brain, and the glass removed without any ultimate injury to vision.

Fundus Photographs of Congenital Retinal Anomaly.

DR. C. O. SCHNEIDER presented a paper on this subject published on page 188 of this JOURNAL.

Discussion. DR. ROBERT VON DER HEYD said Dr. Schneider has presented a regular museum of congenital malformations in these two boys. In the first place, we have a conus of the nervehead, an aborted coloboma formation. We have the hemorrhagic areas. We have the rolling up of the retina. There are remnants of a large embryonic vessel extending toward the ciliary body in one eye. We have the retention of the canal of Cloquet, which can be seen in the older boy and manifests itself as a cleft in the vitreous in the younger brother. Also there had been a congenital cataract in the younger boy. This one eye has been needled.

It would be interesting to have some one with a thoro knowledge of embryology study these two cases and correlate some of these findings and possibly give the reason for them. I have taken these two photographs of the rolled up retina on the same horizontal plane at different angles. Properly paired they give us a stereopicture of the fundus. In making photographs of the fundus I hope no one will attempt ever to modify them by retouching or coloring.

I think Dr. Schneider should be congratulated in showing these two, possibly the most interesting cases which have been presented to the Society for years.

DR. MICHAEL GOLDENBURG said, the case is very interesting and it exceedingly unusual. I have never seen anything quite like it. It is very

difficult to say just what it is. You can see the normal retina above and below. There are definite vessels coming from the upper edge of the disc, bending over and apparently rolling right up and giving off branches. I was at first inclined to think it was a retinitis proliferans, but the fact that it is present in both eyes does not justify one in saying that. I think a study of the entire history from a physical standpoint should be made. We might in that way get some information.

DR. CLARENCE LOEB said I would like to ask Dr. Schneider if he has examined the eyes of the parents to see if they had deformities.

DR. W. H. WILDER asked if there were other stigmata in these children.

DR. C. O. SCHNEIDER (closing the discussion) said, In answer to Dr. Loeb, the father and mother are dead, so it has not been possible to get information concerning the family.

In answer to Dr. Wilder, there are no stigmata except in the eyes.

Bilateral Ptosis Cured by a Hunt-Tansley Operation.

DR. CLARENCE LOEB presented this case. See p. 191.

CLARENCE LOEB,
Corresponding Secretary.

NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

November 15, 1926.

W. T. KENNON, Chairman.

Monocular Persistent Paresis of Accommodation with Central Retinal Changes.

DR. HILLIARD WOOD reported the case of Miss M. W., aet. 38, who consulted him in September, 1922, giving the following history:

She had one attack of tonsillitis, followed by rheumatism, 18 years before. Second attack 7 years ago, without rheumatism. The vision in the left eye had been failing for a month.

Examination: Right eye had normal vision and presented no pathology. Left eye: + 0.75 cyl. ax. 90° V. = 20/40. Jaeger No. 7 type was read at

ten inches with + 2.00 D. S. V. = J-2-15". Pupil was normal in size and the direct and indirect reactions were also normal. Numerous small, pale, yellow maculae were scattered more or less uniformly over macula, not arranged in any definite manner. Small vessels were obscured. No hemorrhages were visible. Nose, antra, and frontal sinuses were normal. Faucial tonsils were septic. Blood Wassermann, examination of blood for malaria, urinalysis, and tuberculin test were negative.

On Oct. 16, 1922, a tonsillectomy was done under local anesthesia.

On Oct. 23, 1922, the vision of left eye, with correction, was 20/25.

On Nov. 18, 1922, vision was the same as above; with + 1.00 D. S. the patient read J-1-12". Retinal changes had practically disappeared.

This partial cycloplegia has been present at every examination made from time to time since 1922.

Nov. 8, 1926, the left eye read J-1-15" with + 1.00 D. S., but can only read J-5 without the sphere. The retina appeared normal.

The interesting point in this case is the persistent partial cycloplegia in the left eye.

Hyperopia was excluded by tests made with use of a mydriatic.

Discussion. DR. HERSCHEL EZELL asked the cause of this unilateral cycloplegia, and quoted Dr. de Schweinitz, "A unilateral cycloplegia is due, or might be due to infection of the ciliary ganglion."

DR. M. M. CULLOM did not know how one could arrive at a diagnosis of infection of the ciliary ganglion, unless an autopsy were held, and he did not know of such a case. Suggested that the condition is possibly congenital in the case of Dr. Wood's patient.

DR. E. L. ROBERTS wanted to know if the patient read comfortably with or without glasses.

DR. R. J. WARNER said that in cases in which there was any pupillary inaction, a spinal Wassermann was indicated.

DR. W. G. KENNON did not believe it congenital, because in that case it would not vary.

DR. HILLIARD WOOD in closing said that impaired vision first attracted the attention of the patient, for her vision was down to 20/200. Replying to Dr. Robert's question, Dr. Wood said the patient was never comfortable reading without glasses, but fairly comfortable with glasses.

DR. EZZELL's suggestion that it possibly was caused by infection of the ciliary ganglion, was difficult for him to accept, altho he had the greatest respect for Dr. de Schweinitz.

Cycloplegia was the patient's only abnormality.

Retinoblastoma.

DR. R. S. SULLIVAN presented the case of a boy 2½ years old. Family history was unrelated to the child's trouble. Five months ago the mother noticed that the child had a peculiar look in his left eye. A month ago he could not see to feed himself. Shortly after this he could not see to walk. There was no history of injury or inflammation about his eyes. Vision with each eye was zero. Right eye was negative externally. Pupil was normal in size and reaction. After dilatation there was seen ophthalmoscopically a whitish or yellowish mass in the lower quadrant with new formed blood vessels growing over the surface. Left eye was negative externally. Tension was normal by palpation. A whitish growth completely filled the vitreous chamber. New formed blood vessels were on its surface.

Repair of Lower Eyelid.

DR. J. LESLIE BRYAN reported the case of a four year old girl who on the afternoon of July 9, 1926, ran around a screen door, which was standing half open. In stumbling she lurched toward the door. The latch hook, on the door, caught in the inner canthus of the left eye, tearing thru the lower lid. Her family physician rendered first aid. Three hours later under ether anesthesia, the wound was cleansed and examined. External wound was about one inch in length extending from near the inner canthus, downward and outward toward the cheek. The internal wound extended well

down into the culdesac, the canaliculus was severed, about one mm. from the punctum. The upper fibers of the orbicularis palpebrarum were severed. The punctum and canaliculus were easily found. A lacrimal probe was passed into the lacrimal canal, the flaps were approximated, and the external wound including the muscular fibers were sutured with black silk. Then the lacrimal probe was lowered, the lid everted, and the conjunctival wound was closed with black silk.

Now the question arose as to how the canaliculus was to be preserved. The lacrimal probe having been in place for several minutes the punctum and canaliculus were well dilated, so he attempted to thread a strand of silkworm gut in the punctum and canaliculus. This was very easily accomplished. After about one-half of this strand had disappeared into the canaliculus, a very small strabismus hook was introduced under the inferior turbinate. When the silkworm gut was located the hook was drawn, bringing with it the strand. The eye and nasal ends were tied and fixed on the cheek with adhesive plaster. On the sixth day the silkworm gut was removed. When the wound healed the punctum and canaliculus were open and functioning. The last time the case was seen there was practically no visible scar. All functions were normal.

R. J. WARNER,
Secretary.

OMAHA AND COUNCIL BLUFFS EYE, EAR, NOSE AND THROAT SOCIETY.

November 17, 1926.

DR. J. C. DAVIS, Presiding.

Chorioretinitis.

DR. S. D. MAIDEN presented a girl of nineteen who complained of poor vision in both eyes for the past six months. Vision was 20/200 in each eye and the fundus showed a diffuse chorioretinitis in each eye. A general examination including Wassermann was negative except for a pair of infected tonsils. These were removed a week ago. Since then, vision seems to

be slightly more cloudy and the right eye shows a rather marked optic neuritis.

Discussion. DR. HAROLD GIFFORD suggested that even in the presence of a negative Wassermann, mercurial injections and potassium iodid ought to be used. Possibly the present dimness of vision is due to a focal reaction from the tonsillectomy and the vision will improve on the present line of treatment.

Orbital Tumor.

DR. H. B. LEMERE presented a woman of thirty-two who showed a bony tumor of the upper inner angle of the orbit, pushing the right eye down and out. The right nasal cavity was entirely blocked. Under general anesthesia, an incision over the tumor was made at the inner side of the orbit and as much tumor as possible was removed with a chisel. The neoplasm arose apparently by a peduncle from the lacrimal bone but had extended into the ethmoid and sphenoid sinuses. On account of her general condition these parts were left in place and only the anterior part of the tumor resected. An attempt will now be made to remove the rest of the tumor. The immediate effect of the operation was to allow the eye to come back into place, the motility being good.

Bullous Keratitis.

DR. DEAN reported a case in a woman of forty. The patient had presented an iridocyclitis and later returned with a bleb one inch in diameter on the cornea. The epithelium was removed and silver nitrate applied. This was repeated a number of times and was followed each time by a recurrence, both silver nitrate and tincture of iodin being applied. March 13, 1925, the epithelium was again removed, one per cent silver nitrate applied, and the whole cornea covered with a sliding conjunctival flap. The stitches came out after one week and the epithelium had healed over smoothly and has remained so to the present date.

Discussion. DR. HAROLD GIFFORD approved of the procedure of the sliding conjunctival flap and considers it probably the deciding factor in the healing.

One of his cases, seen some years ago, kept recurring until it was finally cured by Dr. Dean. Another case in which the opacity had become quite marked was cured by applications of the actual cautery. The other eye which showed the same condition was treated with fresh aqua chlori after removing the epithelium and healing was permanent.

Gonorrhreal Ophthalmia and Congenital Dacryocystitis.

DR. HAROLD GIFFORD showed a colored man who had consulted him the week before with an acute gonorrhreal ophthalmia of the right eye complicated by a congenital dacryocystitis. Both pneumococci and gonococci were found in the smear. After incising into the lacrimal sac, a probe could be inserted almost into the nose and the mucous membrane was cut thru from below beneath the middle turbinate. A drain was placed thru the opening and after this was removed the passage was kept patent by probing and by a silver wire. The lids were treated with copper sulphate crystal and no other treatment was used except argyrol drops. After three days the discharge had almost entirely cleared up but still showed a few gonococci and pneumococci. After five days the discharge had ceased.

Roentgenology of the Accessory Sinuses.

A paper on this subject was read by DR. A. P. Overgaard by invitation.

Etiology of Iritis.

DR. C. H. Fox remarked on the relative rarity of leutic iritis in his practice compared with the figures of other authors. In spite of his belief that idiopathic iritis indicates a failure in diagnosis, he was obliged to place a fairly large proportion of cases under the classification of cause unknown. He believes that the term "toxic iritis" usually indicates an iritis from some focus of infection and that the organisms are probably usually present in the iris. The patient with iritis is in great need of a careful general examination; more so than almost any other patient.

Discussion. DR. HAROLD GIFFORD took up the question of diagnosis and treat-

ment. He agreed with Dr. Fox that there was no such thing as idiopathic iritis. A good many socalled serous iritis cases are probably due to tuberculosis and this condition is difficult to diagnose unless tubercles are present in the iris. He has seen only a few such cases. The cases of luetic iritis show nothing absolutely typical unless gummatous are present which has also been rare in his experience. He emphasized the necessity even in specific cases and especially those of iritis accompanying interstitial keratitis of giving sodium salicylate to combat the inflammation, in addition to antispecific treatment. He also gives mercurial inunctions in a great many cases that are not specific. He asked the members whether they had any cases of amebic iritis as described by Mills and told of a case which was apparently of this origin in which attacks of iritis had occurred after she had discontinued the treatment for amebiasis.

DR. BANISTER stated that in his experience of three years in the Philippines in which he saw a great number of cases of amebic dysentery, he had never seen a case of iritis in these patients. He believes that most of the cases of socalled idiopathic iritis are due to focal infections and believes that an authority such as Foster Moore has taken a step backwards in stating that there is no such thing as iritis due to focal infection. He mentioned the value of using solid atropin in cases where the pupil fails to dilate, this being accompanied by a paracentesis of the cornea if necessary.

DR. DEAN has seen in cases of luetic iritis one or two nodules in the iris with intense congestion about them and a fairly normal iris elsewhere while in tuberculous iritis many nodules are present and the whole iris is affected. He emphasized the value of an intravenous injection of fifteen grains of sodium salicylate and potassium iodid in cases with extreme congestion at the outset after which the ordinary medication is usually sufficient. He reported a case of steel injury followed by a severe reaction which continued until several pathologic teeth were removed. Three days after this the eye was almost quiet.

DR. MAIDEN spoke of the value of neosalvarsan in cases of acute luetic iritis, this being contrary to the teaching that arsenic is dangerous in acute iritis.

DR. W. P. WHERRY spoke of a boy with a gumma of the iris which disappeared entirely twenty-four hours after an injection of mercury solution.

DR. J. J. WARTA has found that in cases where none of the ordinary causes of iritis were found, treatment directed to clearing out the colon has caused them to heal, indicating that a number of cases are probably due to autointoxication. He believes in using calomel at first and following this by sodium salicylate and other measures.

SANFORD GIFFORD,
Secretary.

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Section on Ophthalmology and Oto-Laryngology.

November 19, 1926.

DR. W. T. DAVIS, Chairman.

Headache Due to Eyestrain.

DR. CHARLES M. HAMMETT read a paper on the above subject in which he stressed the importance of a very careful history as the first step toward the elimination of extraneous sources. He mentioned conjunctivitis as being one of the most frequent exciting causes. He said that headache from eyestrain occurs in patients whose nervous system is temporarily unbalanced and mentioned the frequency of this condition during the menstrual period.

He mentioned the type of headache resulting from ciliary muscle strain, which occurs in patients who are rundown or convalescent. He urged the abstinence from near work in these patients and the importance of complete relaxation.

Discussion. DR. J. A. FLYNN said he thought all cases of headache which did not clear up promptly should be gone over very carefully. He mentioned a case which had a very extensive involvement of the frontal sinuses with no symptoms other than a headache after the use of the eyes.

Accommodation in An Aphakic Eye.

DR. JAMES N. GREEAR, JR., reviewed the literature on the theories of accommodation. He then presented L. A., white male, aged 60, who was seen March 29, 1926, at which time he complained of his vision being poor for the past eighteen months. During the past year he had gotten to the point where he could not cross the street with safety, altho he could see fairly well on dark days. O. D. V.=4/200 unimproved, O. S. V.=20/200 unimproved. His pupils were equal and reacted normally. Tension was normal to fingers. His field and light projection were good. The pupils were dilated with euphthalmin. The periphery of each lens was fairly clear. There were marked opacities, both anterior and posterior cortical near the center of the lens, more marked in the right eye.

A Homer Smith combined extraction was performed on the right eye on April 8, 1926. His recovery was uneventful. On May 20, 1926, O. D. V.= 20/20 with + 13. sph. +1.50 ax. 180°. On June 3, 1926, O. D. V.= 20/15 with glass above. Reads Jaeger type No. 2 at 18 inches with same glass. September 20, 1926, O. D. V.= 20/15 with old glass. Reads Jaeger type No. 1 at 18 inches with same glass.

DR. GREEAR said he had never seen a patient who presented this unusual apparent accommodation following cataract extraction. He said he felt sure that a slight shifting of the lens aided his patient in seeing clearly; however, he did not believe this could possibly account for such clear vision at a close range.

Discussion. DR. JOHN W. BURKE said that he had seen two children about 10 and 12 years of age who had previously been operated on for congenital cataracts and could read ordinary test type with the lens that gave them normal distant vision. He suggested that there was some lengthening of the globe by the extraocular muscles in convergence. He mentioned the case reported by Mr. Basil Graves, in which the action of miotics and cycloplegics on the anterior and

posterior capsule of the lens had been studied in an aphakic eye.

DR. H. A. POLKINHOM said he believed there was considerable effect from the shifting of the lens, but he had never seen a similar case.

DR. S. B. MUNCASTER said he believed the extraocular muscles must play a part by changing the shape of the eye.

DR. W. T. DAVIS suggested the use of a cycloplegic to eliminate the action of the ciliary muscle in this case.

JAMES N. GREEAR, JR.,
Secretary.

BALTIMORE MEDICAL SOCIETY,**Section on Ophthalmology.**

December 2, 1926.

DR. W. H. WILMER, Chairman.

Krukenberg's Pigment Spindle.

DR. JONAS S. FRIEDENWALD reported the case of a young mulatto girl, aged twenty-five, who on October 8, 1926, had noted a blur of the vision of her right eye, as if a curtain was coming down from above. On October 12 she was first examined and a large flat detachment of the retina was seen in the lower temporal part of the right fundus. The right eye was myopic about 11 diopters, left eye, 6 diopters. The detachment had come on without any injury and there were no signs of intraocular inflammation. Transillumination was normal. On the posterior surface of each cornea, reaching from the upper to the lower limbus in a vertical line, there were seen innumerable minute golden-brown pigment granules, which with the slit lamp appeared to lie in the endothelial cells of the cornea. The condition was equally well developed in each eye and was not thought to have anything to do with the retinal detachment. This is the youngest case so far on record and the first published in this country. Altogether 32 cases of this congenital anomaly have been recorded since Krukenberg first described the clinical picture in 1899. Of the cases previously described more than three-quarters occurred in myopes and about three-quarters occurred in women. A

point of special interest in the present case was the complete reattachment of the retina with recovery of vision as good as in the unaffected eye under treatment, which consisted of a salt free diet, rest in bed, and sweats with atropin and hot compresses locally.

Prevention of Loss of Sight from Glaucoma.

DR. GEORGE S. DERBY read a paper on this subject which will be published elsewhere in this Journal. See p. 178.

Seventy-fifth Anniversary of Invention of Ophthalmoscope.

DR. HARRY FRIEDENWALD called attention to the date and the propriety of taking cognizance of this anniversary. Twenty-five years ago Dr. Casey Wood and Dr. Friedenwald, as a committee of the ophthalmological Section of the A. M. A., arranged exercises and an historic exhibit at the St. Paul Meeting in 1901 in celebration of the fiftieth anniversary of the invention of the ophthalmoscope. Helmholtz tells us that the invention developed out of his course of lectures on the physiology of the senses during 1850 at the University of Koenigsberg. He was explaining the luminosity of the pupil described by Brücke when the thought came to him how the optic image of the retina could thus be formed and the construction of an ophthalmoscope was the immediate result. "From my medical studies I was well aware of the need that oculists felt in respect to those diseases called 'black cataract' and so I immediately proceeded to glue together an instrument out of pasteboard, spectacle glasses and cover glasses. At first it was very difficult to use it. But for the conviction that it must work, I might not have persisted. In about eight days, however, I had the supreme pleasure to be the first to see the living human retina clearly before me." The construction of the instrument was so simple that he regarded it as "laughable" that others, as well as he himself, had been so obtuse as not to have discovered it earlier.

Helmholtz announced the invention at a meeting of the Physical Society of Berlin on December 6, 1850, but the publication of his "Beschreibung" was delayed until the fall of 1851.

Donders, Arlt and others immediately recognized its importance. A letter from von Graefe to Helmholtz dated November 1, 1851, is of interest: "Most Honored Professor: Pardon me if unknown to you I address you and ask your kind help in relation to a matter which interests me in the very highest degree. Last summer I heard in Vienna thru Professor Brücke that you had been successful in constructing an instrument for the examination of the retina in the living eye. Indeed, I had the pleasure to learn from him some details of the means you had used. Professor Brücke was all the more ready to give me this information because we had frequently discussed the possibility of such an instrument. . . . We all rejoiced because of the news of your successful construction of such an instrument and I awaited its publication with impatience; a few days ago I found the pamphlet on my return to Berlin after a long journey. Studying your paper has not only given me a clearer understanding of the instrument but also of other hitherto unsolved physical problems. Inasmuch as I have been devoting myself for several years to ophthalmology, I should like as soon as possible to try out this long hoped for diagnostic aid and apply it to our science. I have also promised my London and Paris colleagues, Dr. Bowmann and Dr. Desmarres, to send to each, one of the instruments. The former especially, who interests himself deeply in the scientific cultivation of this field and who has at Moorfields Hospital a very extensive field of practical activity, is looking forward to obtaining the instrument at the earliest possible moment. I have asked the local mechanician, Dörffel, a few days ago to construct a few of the instruments, but since it will take some time to do this and I desire also to compare them with your Koenigsberg instrument, I request you, most honored Professor, to order your local optician to send me one or two ophthalmoscopes made accurately in accordance to your design to my address in Berlin." He signs himself "Dr. A. von Graefe, Arzt-Operateur in Berlin."

On the sixteenth of December of the same year, a year after the eventful

discovery, Helmholtz wrote to his father: "We have gradually had eighteen orders for ophthalmoscopes so that my mechanician is doing a good business. Of these, four went to Holland, one to Paris, and one each to London, Krakau, Prag, Breslau, Bonn, Tübingen, Dorpat, Berlin; in Berlin, too, Dörffel is making instruments at the instigation of Dr. von Graefe. Six have already been sent off. The others are almost ready and the mechanician has made a little change which will render the instrument more convenient. He is also manufacturing others besides those already ordered and will send one in the near future with other articles to New York."

Dr. Friedenwald showed a copy of the original publication of Helmholtz of 1851 and a Helmholtz ophthalmoscope of the original form which belonged to von Graefe.

Those interested in the history of the invention are referred to McKendricks "Herman von Helmholtz," London, 1899, p. 72, Koenigsberger's "Herman von Helmholtz" (German), Braunschweig, vol. 1, p. 133, and Journal A. M. A., March 1, 1902.

JONAS S. FRIEDENWALD,
Secretary.

CHICAGO OPHTHALMOLOG- ICAL SOCIETY.

November 15, 1926.

DR. EDWIN J. GARDINER, President.

Ulcerating Interstitial Keratitis.

DR. N. H. Fox presented Mr. A. E., 25 years old, married, white, who entered the Illinois Charitable Eye and Ear Infirmary on July 27, 1926, complaining of pain, redness and loss of vision of the left eye. Six weeks previously, while working in the Gary Steel Mills, some dust got into the eye, and four days later he went to the company physician, who could not find any evidence of a foreign body. The condition gradually became worse, and he consulted another physician, who informed him that it was due to a blood disease. He had been married two years. His wife was in good health. Her first pregnancy resulted

in a full term, stillborn child one year after the marriage. He denied venereal infection but blood Wassermann was + + +. Family history was negative.

Upon physical examination the right eye appeared normal with vision of 20/25; the left eye had light perception only. There was marked photophobia and lacrimation and intense ciliary injection. The cornea was ulcerated in the center for an area of 5mm., in the middle of which there was an area less than 1 mm. in diameter, translucent, and projecting apparently into Descemet's membrane. The base of the ulcer was densely opaque and was surrounded by an intensely vascular ring, extending from the margin of the ulcer to the limbus. The entire cornea was opaque, the iris not being visible.

Three days later the ulcer perforated. The condition rapidly subsided leaving a dense opacity. Vision was reduced to perception of hand movements at three inches. On August 3, the right eye became involved. This began at the limbus, spreading rapidly toward the center until the cornea consisted of a dense vascular ring surrounding a grayish-white, avascular area 4 mm. in diameter. Vision was diminished to light perception. This central area stained slightly with fluorescein. After a very stormy course of two months the condition began to subside, so that at this time the peripheral portion of the cornea had cleared. During the course of the disease several smears and cultures had been made from the conjunctival sacs of both eyes as well as from the ulcer itself. No organisms were found.

Only nine cases similar to this had been found in the literature; one by J. Hutchinson, four by E. T. Collins, two by G. A. Berry and two by E. Fuchs. Excluding those reported by Fuchs, five were in females, two in males, all being between 6 and 23 years of age. All had unmistakable signs of hereditary lues. Six of the nine cases perforated. The occurrence of this complication was not mentioned in many textbooks, while others simply stated that the condition seldom occurred.

Berry stated that the reason for the complication being rare was: "Altho the name given to this rather common affection implies that there is an inflammation of the cornea, yet there is in reality no corneal inflammation in the sense of there being a focus of disturbance in the cornea itself. The appearance is due to the blocking of the interstices—probably the lymph channels—with leucocytes spreading from a focus outside of the cornea, in the anterior part of the choroid. This is comparable to the reddened and edematous zone which surrounds a focus of inflammation anywhere in the skin. The healing process of extracorneal inflammatory center results in the dissipation, more or less completely, of the inflammatory products which invaded the meshes of the cornea itself."

In searching for the cause of corneal necrosis in these cases, it was necessary to consider infection, trauma and elevation of tension. Hutchinson stated that the corneal ulceration in his case was due to the feeble physical state, together with the excessive doses of mercury. All the other cases reported, together with the present case, were in good physical condition and had not received excessive antiluetic treatment.

There was a striking similarity in all the cases reported, including the present one. They might be called malignant types of interstitial keratitis. The opacity of the cornea was followed by intense vascularity beginning at the margin and gradually extending all over, until ultimately only a small central island of nonvascular cornea remained. This island assumed the aspect of a yellow slough and ulcerated. The corneal necrosis was probably due to the blocking of the nutrient channels caused by pressure of the invading cells. The necrosis therefore began in the middle and deeper layers, extending to the surface and in some cases perforating. The great resistance of Decemet's membrane probably prevented perforation in some cases.

In all the cases reported, including this one, only the cornea of the eye first involved underwent necrosis. The treatment and probably also the de-

fensive mechanism stimulated by the acute condition so modified the course as to prevent ulceration in the other eye.

Acute Congestive Glaucoma.

Dr. M. GOLDENBURG, in presenting this case, stated that he did so for the purpose of demonstrating the many perverted characteristics of that group of symptoms referred to as glaucoma.

M. O., aged 44, entered the hospital on June 30, 1926, with a history of very painful and reddened left eye. The trouble had been present for about two weeks. The pain radiated to the head and neck on the affected side, and was accompanied by marked loss of vision.

General physical examination was negative. Examination of the left eye disclosed marked blepharospasm, lachrymation and injection. Cornea was stippled; anterior chamber shallow; pupil dilated eccentrically and fixed; light perception and projection good; tension by Schiötz, 68. Treatment by active nonsurgical therapy, i. e., eserin every three hours, pilocarpin, sweats, catharsis, and hot fomentations to the eye, reduced the tension to 47, but there was no reduction in pain. The following day the tension went up, with much pain.

In the presence of a culture that was not clean, it was deemed necessary to operate to relieve the pain which could not be controlled by any means. An attempt to operate under local anesthesia failed owing to the extreme pain and the panicky state of the patient. Under general anesthesia, an iridotarsis operation was performed, with some difficulty. The keratome was entered posterior to the iris and the iris incarcerated in the wound. Recovery was slow, but the pain rapidly passed off. On Nov. 5, 1926, the tension was taken in the morning: R. E. 14, L. E. 28 $\frac{3}{4}$.

In the afternoon of the same day the patient complained of a sudden severe pain in the right eye. The tension taken at this time was 62, an elevation of 48 within a few hours. Non-surgical therapeutic measures instituted as before gave no reduction of tension or relief of pain. On Novem-

ber 6th an anterior sclerotomy was performed with much difficulty, under local anesthesia. The following day the pain ceased; tension R. E. 14, L. E. 26. Atropin sulphat was instilled in both eyes. The tension remained low in the right eye, but now had a tendency to fluctuate between 26 and 30 $\frac{3}{4}$ in the left eye, with occasional slight pain. This slight elevation of tension in the left eye was probably due to improper prolapsing of the iris in a wound that was too far back. This would be corrected when the eye was culturally clean.

The interesting features were the sudden development of hypertension in the right eye without premonitory signs or symptoms, and the control of this tension by the simple procedure of anterior sclerotomy.

Iridotaxis Operation.

The case was presented by Dr. Goldenburg for the purpose of illustrating the efficiency of an incarcerated iris operation in the lowering and maintaining of normal intraocular pressure in the presence of serious complications.

F. S., aged 58, male, white, a steam engineer, presented himself on Nov. 18, 1926, for relief of severe pain in the right eye. He gave a history of failure of vision in this eye about twelve years ago, following a burn of the cornea. In August of 1926, the eye began to give him severe pain. There had been no trouble with the left eye.

Examination of the right eye disclosed no light perception or projection; lids slightly swollen and injected; conjunctival and ciliary injection marked; iris discolored (a greenish gray) and contracted; lens completely opaque; anterior chamber almost obliterated; iris and lens pushed forward. Tension 72 by Schiötz. Vision in the left eye was 20/25; fundus and media negative.

Diagnosis: Acute exacerbation of a chronic congestive glaucoma with mature cataract, probably secondary.

The patient was placed on a severe nonsurgical regime for several days, so that he could be studied and prepared

for operation. On November 23, iridotaxis operation was performed without any difficulty. In spite of small repeated hemorrhages into and almost filling the anterior chamber, the tension remained at 18. The lens would be removed in the usual way when this tension had quieted down.

Postencephalitis Lethargica.

DR. GOLDENBURG said that this case had come to the clinic for the purpose of correction of a divergent strabismus following the lethargic disease two and one-half years previously. He first came under observation Nov. 12, 1925. His occupation was clerical. He was 20 years old, married, white. He gave a history of sleeping sickness two and a half years ago, following influenza. Previously he had been well. At present he felt sleepy, lacked energy, and was unable to hold a position for any length of time.

Physical examination disclosed a blood pressure of 120/70; urine, blood differential and Wassermann were negative. He appeared sleepy and lazy and had taken on much fat. Vision was: R. E. 20/30; L. E. 20/20. The right eye turned out and fixed with the left. Under cover test either eye would deviate.

Neurologic examination was made by Dr. Clarence Neyman. The right eye turned out. He had previously complained of diplopia. When walking the arms were held in a semiflexed position, and hands in part pill rolling motion. The right nasolabial fold was flatter than the left, but there was no definite paralysis of the seventh nerve. There was lagging of right velum of palate. Patellars were exaggerated and the patient complained of spasticity of the gastrocnemii muscles.

Diagnosis: Postencephalitic Parkinsonian syndrome, due to disturbances in the corpus striatum, and nuclei in pons, embracing especially the third, seventh and ophthalmic on the right side.

Pemphigus of Both Eyes.

DR. MICHAEL GOLDENBURG presented a case of this disease.

C. LOEB, Corresponding Secretary.

PITTSBURGH OPHTHALMOLOGICAL SOCIETY.

November 27, 1926.

DR. EDWARD STIEREN, Presiding.

Pituitary Tumor.

DR. ADOLPH KREBS presented the case of a negro janitor, aged 47, who complained of ocular pain and failing vision. Vision O. D. and O. S. was 7/30. A corrected low grade hyperopia improved the vision to 7/20 in each eye.

Inspection shows a peculiar rotatory nystagmus about the antero-posterior axis of the globe at about three o'clock at the limbus of the right eye and at nine o'clock in the left, giving a see-saw movement to the globes. There was also present a synchronous head movement. The pupils were equal and responded sluggishly to light. The eyeballs were prominent and measured 27 mm. with the exophthalmometer. The fundi showed thru clear media, a bilateral, equal optic atrophy. Visual fields showed a bitemporal hemianopsia, that of the left eye being complete and in the right complete all but a narrow strip about five degrees at the fixation point and gradually narrowing to the vertical meridian at thirty degrees above and forty degrees below. The nasal fields were normal for form and colors. Blood Wassermann was negative. Roentgen ray by Dr. Robinson shows a large pituitary fossa with posterior clinoid erosion.

The Wernicke pupillary reaction was present to the extent that light thrown on the nasal part of the retina of either eye, resulted in a lesser pupil response than that of the temporal part of the retina.

Dr. Krebs stated that he had in view a more extensive examination by neurologist and was going to have a spinal Wassermann test.

Discussion. DR. EDWARD STIEREN mentioned two cases that he had seen, one of which he reported. One was thought at operation to be an adenoma. The other had one blind eye and temporal hemianopsia in the other. The neurologic diagnosis was compensatory hypertrophy. There

was a complete cure following the administration of pituitary substance.

DR. ADOLPH KREBS reports seeing three cases but had never used pituitary substance, but would try it in this case reported.

Ossification of the Eyeball.

DR. C. BERNATZ reported the case of a male clerk, aged 30, who complained of inflammation of the left eye for one and one-half months following a head cold. The right eye was without pathologic symptoms. He gave a history of blindness in the left eye since birth, without any history of injury. Four years ago refraction was done and glasses prescribed for photophobia and inflammation of the right eye, with immediate relief. Inspection of the left eye showed ciliary injection, infiltration of lower half of the cornea and horizontal oval pupil. The left iris was thickened at about three o'clock and had the appearance of a new growth; the anterior chamber was slightly deeper than the right; the lens was calcareous and luxated downward; the tension of the globe was slightly minus. Ophthalmoscopically the right eye was negative and the left eye gave no fundus reflex. Dr. Dickinson found a deflected septum on the left side and pus in the left antrum. Treatment of the antrum caused a subsidence in the inflammation of the left eye.

An enucleation was done on March 16, 1925, and the removed globe on palpation showed a hard, freely movable mass in the globe. On section of the globe this was found to be bone. The lens was calcareous and the dislocation downward was due to an organized mass directly back of and below the lens. The bone formation extended from the optic nerve behind, gradually thinning out toward the front as far as the ora serrata. Ossification probably started from the choroid.

Discussion. DR. EDWARD STIEREN has seen several similar cases and states that the structures are ordinarily true bone.

DR. E. A. WEISSEY showed a specimen of ossification of the cyclitic membrane. THOS. H. MANLEY, Secretary.

American Journal of Ophthalmology

PUBLISHED MONTHLY BY THE OPHTHALMIC PUBLISHING COMPANY

EDITORIAL STAFF

EDWARD JACKSON, Editor,
217 Imperial Bldg., Denver, Colo.
M. URIBE-TRONCOSO,
226 W. 70th St., New York City.
MEYER WIENER,
Carleton Bldg., St. Louis, Mo.

CLARENCE LOEB, Associate Editor,
25 E. Washington St., Chicago, Ill.
L. T. POST, Associate Editor,
Metropolitan Bldg., St. Louis, Mo.
HARRY V. WURDEMANN,
Cobb Bldg., Seattle, Wash.

Original papers, correspondence, and other scientific communications should be addressed to the Editor. Books for review may be sent to any member of the editorial staff. Reports of society proceedings should be sent to Dr. Lawrence T. Post, Metropolitan Bldg., St. Louis, Mo.

Proof should be corrected, and returned within forty-eight hours to the printers. Reprints may be obtained from the printers, Tucker-Kenworthy Co., 501 S. La Salle St., Chicago, Ill., if ordered at the time proofs are returned. But reprints to contain colored plates must be ordered when the article is accepted.

The annual subscription for the JOURNAL and the OPHTHALMIC YEAR Book is twelve dollars, in advance.

Subscriptions, applications for single copies, communications with reference to advertising or other business, should be addressed to the Manager of Subscriptions and Advertising—

JEAN MATTESON, ROOM 1209, 7 West Madison Street, Chicago, Ill.

GLAUCOMA IN THE DISPENSARY.

The best treatment for simple glaucoma is still an open question. Many factors must be considered. Whether one is an advocate of operation or of drug therapy, he cannot fail to agree that success with miotics depends on frequent medical observations, for the balance of the life of the patient. The drugs must be varied in strength from time to time and occasional substitutions have to be made.

While such frequent visits are feasible among well to do people, they are impractical for the clientele of a free dispensary. These patients quickly discontinue treatment. This is from a variety of causes. For one, their employment depends on regular daily attendance, without hours off for medication. For another and more important, the mentality of the average clinic patient is not very high, so he fails to absorb the idea of protracted therapy. His idea is that he should be quickly cured of his trouble, or at least that he should be promised a cure in time. He is quite unprepared for the concept of treatment of his eyes for the remainder of his days, in order to preserve whatever sight he has left. His appeal to the surgeon is apt to be late, as the very insidious progress of the trouble,

occurring in a nonintrospective individual, has led to delay, until usually the disease is well developed by the time he has determined that something must be done.

The patient is tested in the clinic as to visual acuity, fields and tension. The condition of his eyes is explained to him. Pilocarpin or eserin is prescribed and he is told to return. This he continues to do for a varying length of time. Very rarely does this last for six months. He is discouraged with the failure of the eyes to improve and so discontinues his visits.

Solicitation thru a follow up worker may encourage him to renew his visits for a time, but that less than five per cent will continue beyond two years, is shown by an analysis of one hundred cases at one of the large dispensaries in this country. This failure to continue treatment leads, of course, to only one result.

It is true that these patients seek help elsewhere, but once discouraged, they are not likely to continue treatment long anywhere, if they find the same therapy is given with which they previously lost heart, and, meanwhile, the disease is rapidly and continually advancing.

Operative treatment, when successful, eliminates to a large degree the

necessity of frequent observation, and thereby does away with the greatest drawback to medicinal care. The type of operation is not to be considered here, but as an illustration of the good results following corneoscleral trephining, the report by Davenport in the British Journal of Ophthalmology, of four hundred cases of primary glaucoma so treated at Moorfields between 1919 and 1923, is interesting. Eighty per cent are recorded as successes and only 4.5 per cent as complete failures. This is certainly an encouraging report. It is better than most. Possibly other operations offer equally good prognoses.

The patients who return to the clinic after many years, with little or no advance in the disease in spite of neglect of treatment, are always those that have had some successful operation. There are many such in the dispensary records; and, tho failures occur, it seems that for the average poor, irresponsible individual with simple glaucoma, an early operation should be urged.

L. T. P.

DENVER GRADUATE COURSE AND CONGRESS OF 1926.

It was the privilege of the writer to attend in part the Fourth Annual Summer Graduate Course given in Denver, under the auspices of the Colorado Ophthalmological and Oto-Laryngological Societies and present a paper in the Congress which convened at the same time.

A most excellent idea indeed was to amalgamate the Course and the Congress and have the students actively participate in both. The graduate course lasted for two weeks, from the 12th to the 24th of July; and the Congress was held for two days, on the 16th and 17th. The special subject selected this year for demonstration was Biomicroscopy of the Eye (slit lamp), which was divided between six instructors, each covering a part; and teaching the same matter every day to a group of six students. Beside this general subject, lectures and demon-

strations were held on the common diseases of the eye and ear, by members of the society and also by guests, specially invited.

Dr. T. B. Holloway, Philadelphia, gave four lectures on fundus conditions connected with vascular diseases, with moving picture demonstrations.

Dr. Robert Von der Heydt, Chicago, six lectures: The slit lamp and corneal microscope. Its use in ocular examinations.

Dr. M. Uribe Troncoso, New York City, two lectures: The gonioscope and goniometry.

Besides these guests, Dr. Edward Jackson, Denver, gave four lectures on the principles of operations on the extraocular muscles; and Dr. William C. Finnoff gave four lectures on histopathology for biomicroscopy.

In the section of Oto-Laryngology the guests were: Dr. Samuel J. Kopetzky, of New York, four lectures on acute and chronic middle ear infections. Diagnosis and treatment of various types of deafness. The ear in relation to industrial injuries. Diagnosis of intracranial complications of acute and chronic middle ear infections. Sinus thrombosis, meningitis and otosclerosis.

Dr. H. J. Prentiss, of Iowa City, gave five lectures on anatomy and development of the temporal bone, and Dr. F. R. Spencer, Boulder, two on laryngeal tuberculosis and anatomy of the accessory sinuses of the nose. It would be impossible for me to mention in this article all of the subjects which were taught in this course and give the names of the different instructors.

My principal object in calling attention to this meeting, is to emphasize the fact that a new center for the teaching and diffusion of ophthalmology has been created in the West. This is the fourth year the graduate course has been held, and its success is steadily growing. Fifty-nine students were enrolled, and they came practically from every state in the west and middle west, from Washington to California and from Minnesota to Missouri. There was also one physician from Buffalo, New York.

The Colorado Ophthalmological and the Colorado Otolaryngological Societies deserve great credit for the success of this enterprise. The idea of a graduate course in the West was initiated by the Fuchs Society of Texas, which intended to have a meeting in New Orleans in 1923. This could not materialize on account of numerous difficulties. The scheme was taken up by the Colorado societies, and successfully launched in the same year in Denver. Since then the attendance has increased annually and the courses, notwithstanding the small fee charged, are self supporting.

As said before, an interesting departure was to combine the meeting of the local Congress of Ophthalmology with the Graduate Courses. This gave many men who could not attend the latter an opportunity to enter into the spirit of the movement; and to many of the students—some of them already distinguished in the scientific field—the advantage of being able to introduce their views and discuss important subjects.

Another interesting feature was the arrangement of round table luncheons, free to the students, in which questions offered in writing were answered by the students themselves or by the instructors. These questions dealt with the subjects studied, or with any others they might like to hear answered or discussed. The days were devoted alternately to ophthalmology and otolaryngology.

The demonstrations and clinics were given from 8 to 10 in different clinics and hospitals, and the lectures from 10 to 12 a. m. and 2 to 4 p. m. in the hall of the Medical Society of the city and county of Denver.

The importance of this course does not only reside in its educational value and the practical training it procures to physicians practicing far away from the large cities, but also in the broad and novel spirit in which it has been organized, giving to the student not only the ordinary instruction, but making him conversant with the new and advanced methods, with the refinements of diagnosis and treatment. An-

other great advantage is the stimulus for scientific work and research which such gatherings arouse in men isolated in small towns, and the relations they are able to form with progressive and enterprising physicians of other localities.

Some of the students have attended the courses every year, which is the best proof of their continued interest in them. Every effort in this direction which tends to improve our medical education and decentralize knowledge and research work, ought to be warmly encouraged and praised.

M. U. T.

OPHTHALMIC EXAMINATIONS.

The American Board for Ophthalmic Examinations is favorably known to many American ophthalmologists. But its methods and purposes are not so well known as they might be, after its examinations have been held ten years, in all parts of the country from Boston to San Francisco and Minneapolis to New Orleans. The next examination will be held in Washington, D. C., Monday, May 6th, the day preceding the meeting of the American Medical Association.

At every examination some ophthalmologists are present who would like to take the examination, but who have not understood what was necessary in order to do so. The requirements to be met were carefully worked out ten years ago, have not been much changed since that time, and do not seem to need change of any radical character, to serve the purpose of developing an appreciation of what study is needed as preparation for special practice, how and when it may be carried on, or how it can properly be demonstrated to this Board, representing the national organizations of ophthalmologists.

The examination of general professional reputation, published papers, work in teaching and part taken in discussions, have not been overlooked, in determining who should be certified by the Board. At first there were many whose fitness for certification could be

fixed by such considerations. But as these were passed upon, or had shown indifference with regard to new standards of fitness for special practice, the applicants came to be chiefly recent graduates in medicine, who could only be judged by tests in the form of written, verbal and clinical examinations.

The series of case records, such as have been depended on by the American College of Surgeons, are now demanded of all applicants. These have to be sent in two months or more before the meeting for examination, with statements of study and interne or assistant positions. Thus the members of the examination committee, living in different parts of the country, can each have the opportunity to read and consider all these records. Fewer such records are required than have been expected for the surgeons, whose general operative work has to be judged in this way. But such records do give important evidence, regarding the methods the applicant uses, his familiarity with responsibilities and issues of operative practice, and his breadth of view regarding the interests of the patient, and ultimate consequences to be expected or avoided.

The candidates' methods of examining patients are tested by the examiners, watching the candidate try the patients by various methods, for errors of refraction, ocular balance and movements, fields of vision, tension of eyeballs, examination with the ophthalmoscope, and by focal illumination and other standard methods for diagnosis. Acquaintance with the relations of eye lesions to general diseases and the varied therapeutic measures to be resorted to, are ascertained by conversation of the examiner with the candidate, about actual cases presented, or cases stated for the purpose.

These examinations can only be held where a large variety of clinical cases are available, with the full equipment for examination of cases, that any candidate may be accustomed to use. To make sure of a fair trial, each candidate is asked to bring his own ophthalmoscope and he may bring other instruments not in common use, that

he may prefer for particular methods of examination.

There can be no question, that the certificate granted after such an examination is of some value, as evidence of proper educational preparation for ophthalmic practice. This is getting to be recognized by oculists seeking qualified partners or assistants, and by other members of the medical professions referring patients for ocular examinations and consultations. It is also being expected from applicants for hospital positions and those desiring to work for corporations.

It is not an examination to be taken off hand, when attending a meeting where one is being held. Even tho no other opportunity for it may occur for another year, the prospective candidate should at once secure the application blanks of the Board, find out what he needs to do and go to work on the required case reports.

E. J.

BOOK NOTICES.

Proceedings of the Optical Convention, 1926. Parts I and II. Cloth. Quarto, two volumes, 1078 pages, 46 plates and 393 illustrations in the text. London. Published by the Convention. Printed by the University Press, Aberdeen.

This "optical convention" is the third of its series. The first, in 1905, had for its president Sir Richard J. Glazebrook, of the National Physical Laboratory. The second in 1912 was under the presidency of Prof. Sylvanus R. Thompson, head of the London Technical College. Then came the war, and the third convention did not meet until April 12, 1926, with Sir Frank Dyson, Astronomer Royal, to preside over it. The interval of fourteen years had called out great advances, on many lines. The 94 papers here published deal with a wide range of subjects, including: "Optical theory, optical history and education; optical glass and the manufacture of optical elements; astronomy, microscopy, spectroscopy, and interferometry; photography; ophthalmology and spec-

tacle manufacture; cinematography and projection; color, photometry and illumination; surveying, including aerial surveying; and optical apparatus in the services."

The list of 59 vice-presidents shows 20 who had been honored by knighthood, including Sir John Herbert Parsons, Sir Charles Sherrington, and Sir St. Clair Thomson, from the medical profession. There were 32 Fellows of the Royal Society. Of the papers, 13 refer to color vision and instruments for testing and observing color, and 21 others are on subjects of visual optics. The titles of these papers will be found under appropriate headings in *Current Literature*. But, besides these, there were 60 other papers, that referred to other parts of the field of optics. A worker in any part of the field, especially one engaged in optical adjustments of the eyes, cannot look over these pages without gaining a new sense of the vastness and importance of the part vision plays in the lives and labors of civilized peoples.

The papers on color and color vision deal with it from various points of view. One of 80 pages makes a critical survey of modern developments in colorimetry and allied sciences. New instruments for investigating color perception and other color tests are described. Color printing, absorption of colors, color problems in the woollen industries (largely of fading), theatre mutochromes, colored glasses, color filters, and the mathematics and theories of colors, all come in for intelligent discussions. The reader gets the impression, that color perception and its anomalies is a subject of great interest and practical importance in our industrial life; that many acute minds are thinking about its varied phases, and that the ultimate boundaries of possible knowledge about colors lie beyond the horizon of our present science.

One important element in the convention, the "branch dealing with ophthalmology and the manufacture of spectacles" as the president termed it, is represented in the *Proceedings* by a paper by Prof. G. Elliot Smith

on "The Eye and Its Functions." Tracing its evolution, in opposition to Helmholtz' exaggeration of its defects, it points out "that in certain respects the eye is superior to any device made by man." A paper on the effects of obliquely crossed cylinders discusses certain problems that claimed attention in America a generation ago, by the writer, Dr. G. Hay, Dr. Carl Weiland, and C. F. Prentice. There are a number of papers dealing with questions that American readers are familiar with, such as statistics of ametropia and heterophoria, the mechanism of accommodation, anisometropia, the influence of facial asymmetry on prescribing of glasses and the mathematics of refraction.

Improvements in microscopes and telescopes and their accessories, photography, including mapping and aerial, projection apparatus and cinematograph, illuminating engineering, lighthouses, photometry, pyrometry, leveling and surveying instruments, and allied subjects, are appropriately considered here; and all serve to illustrate how wide and important are the uses of accurate vision. There is a group of historic papers that suggest many points in the history of visual optics; and many instruments of historic interest were exhibited. There was an astrolabe supposed to have been used on the Spanish Armada. Sextants made in 1700 on the principle suggested by Sir Isaac Newton, the working microscope of Dr. Robert Hooke, 1665, that of Schwann, 1839; and of Ernest Hoeckel, with a micrometer made by Tolles of Boston; and the oil immersion lens of the same maker, that demonstrated the superiority of its wider angle to the Committee of the Royal Microscopical Society. There was also the microscope that belonged to the father of Lord Lister, and the centennial microscope, made by Zentmayer of Philadelphia, that was awarded the Gold Medal at the Paris Exposition in 1876.

The account of this historic exhibit, the historic references in many of the papers, and the president's address, which dwelt especially on the history

of optical instruments in astronomy, give a broad and interesting view of the history of practical optics; which the new instruments and processes, and the suggestions thrown out in discussing them, bring quite up to date, with a glance forward to advances in the near future.

Of interest to all ophthalmologists will be these sentences at the close of the presidential address: "The sight-testing opticians are at the present time attempting to obtain state recognition. I understand that there is some difficulty in adjusting the spheres of action of the ophthalmic surgeon and the optician. Those who can afford it would always, I imagine, consult an ophthalmic surgeon. The point at issue appears to be whether the optician has sufficient medical knowledge to refer his client to an ophthalmic surgeon when an exceptional case arises. I am not competent to express an opinion on this point, but mention it as giving an added interest, in the papers and exhibition, to the subject of ophthalmology and spectacle manufacture."

Apparently these volumes can still be obtained thru booksellers or the secretary of the convention, at 1 Lowerer Gardens, Exhibition Road, London, S. W. 7. They will always be valuable to a reference library on ophthalmology.

E. J.

Catalogue of Optical and General Scientific Instruments, Optical Convention of 1926. Paper, quarto, 336 pages, 476 illustrations. London, published by the Convention.

This book, which has been obtainable in the same way as the one mentioned above, but for the price of six shillings and postage, is intended as a permanent work of reference to British Optical manufacturers at the time of the Convention, and well fulfills that purpose. It contains a few pages of advertisements; but the bulk of the catalogue has been carefully compiled by the editing committee, altho they disclaim responsibility for the descriptions given. There are many more in-

struments referred to than are illustrated altho sometimes a single illustration shows several pieces of apparatus.

The table of contents gives an idea of how the different instruments were classified, thus: 1. Optical glass and simple optical elements. 2. Spectacles and eyeglasses. 3. Ophthalmic instruments. 4. Small telescopes and binoculars. 5. Astronomical instruments. 6. Nautical instruments. 7. Microscopes. 8. Photographic apparatus. 9. Optical projection apparatus. 10. Interferometers, spectrometers, spectrographs. 11. Photometers. 12. Illumination. 13. Color. 14. Surveying instruments. 15. Sighting apparatus. 16. Optical signalling apparatus. 17. Meteorological apparatus. 18. Miscellaneous. 19. Scientific and technical publications, Experimental and research section and Historical instruments. There are also lists of entertainments, an index to classified exhibits, and an index to exhibitors in the experimental and research section and historical instruments.

This volume is worth looking over. The way some one else has solved a mechanical problem is most suggestive of solutions for problems one is working at. It is also worth having for reference. The instruments here mentioned and described will be better understood by the help of this account of them, when they are mentioned in books that assume the reader is already familiar with such things. Even the section on spectacles and eyeglasses refers to them from a different point of view from that habitual to the ophthalmologist.

E. J.

South America Amplified to Include all of Latin America; The Van-dyck Cruise. Franklin H. Martin, M.D., L.L.D., F.A.C.S. Revised edition. Buckram, 12 mo, 460 pages, illustrated. New York and Chicago, Fleming H. Revel Co. 1927.

Altho this may be regarded as a second edition of the book published by

Dr. Martin five years ago (see vol. 5, p. 242), it represents the work of additional collaborators, notably Drs. Thomas J. Watkins, Francis P. Corrigan and Edward I. Salisbury. This book has had a healthy growth, in value as well as in bulk, and its original interest is well sustained. It now represents ten trips of medical discovery and exploration; and the outline of them, following the introduction by Dr. William J. Mayo, gives a good idea of how much of interest Latin America holds, for the physician or surgeon seeking respite from professional cares and struggles.

Having read that much, we cannot imagine a member of the medical profession who will not read on, as leisure presents, thru part I, the 23 chapters descriptive of the 17 countries visited. Part II is devoted to the American College of Surgeons and its Relations to the Latin American Countries. Part III, 90 pages, makes the reader acquainted with the Surgeons and Medical Institutions of Latin America; Part IV, A Summary of Facts, Historical, Geographical, Political, Social and Industrial, has been written by Miss Eleanor Grimm, who also contributes Part V, containing the vocabulary of English-Spanish and English-Portuguese equivalent words and phrases, and weights and measures.

Altogether this volume will be very attractive to any physician who wishes reading that will hold his interest, and not remind him of his difficulties in practice. It will also furnish excellent preparation for a trip, either to the tropics or farther south. More than that, it will serve a purpose that justifies the use of a portrait of President Coolidge as the frontispiece. It will help to broaden the common understanding and deeper feeling of mutual good will, between the United States and Canada and the Latin American countries to the south of us.

E. J.

CORRESPONDENCE.

CORRECTIONS.

Treatment of Trachoma.

The paper on the "Treatment of Trachoma by Intramuscular Injections of Mercury," published in the January number, page 33, perpetuates a natural inference that the work on this line reported in London in 1924 has been done by an ophthalmic surgeon of that city. The error is brought to our attention and the credit properly placed, by the following, taken from a letter by Dr. Ferguson:

"I am much pleased to know that my work in Southampton, while in the U. S. Public Health Service, with trachoma, has made a trip around the world as it were. If you will look up American Medicine, New York, March 1926, p. 186, you will see some further use of white cells, that followed my service in Southampton, as reported by Arthur Zorab of the Southampton Eye Hospital."

"I have just written to Dr. Alvis and corrected the impression that I am a London man. I like the town mighty well and have a lot of good friends in the profession there, but this is my home town."

BURR FERGUSON.

Birmingham, Alabama.

Symptoms of Intracranial Lesions.

To the Editor:

A letter from Dr. Lyster of Los Angeles suggests certain corrections in the text of my article in the May Journal, v. 9, p. 330. The hemianopsia affects the opposite visual field, since it involves the homolateral side of the retinae. Respecting crossing of deafness, and rarely of facial palsy, I must be guided by Eversbusch as to edema of the internal capsule; such edema may be very slight to bring about symptoms which are "in general crossed."

I am very glad that so careful a scholar as Dr. Lyster was sufficiently

interested in my didactic compilation to make this communication.

RALPH A. FENTON.

Portland, Oregon.

Mechanism of Accommodation.

In the article on this subject, published in the January issue, certain errors occurred to which the author calls attention. "There was an inadvertent misplacement of legends pertaining to the microphotograph. Fig. 5, which represented a cross section of an eserinized human eye, was not the specimen in which there was detachment of the entire choroid and posterior end of the ciliary body. The

proper microphotographs will be inserted in the reprints of this article, and anyone interested is requested to send his name to the author so that a reprint may be forwarded. There was also a mistake in the text. The word 'not' at the beginning of the next to the last line in the second paragraph, page 25, should have been omitted.

In the discussion on page 58, quotation marks surround the words "certain angle." The original words which Hess used may be translated as stage, or degree, or height of accommodation, but should not be written "angle."

Yours truly,
St. Louis, Mo. W. H. LUEDDE.

ABSTRACT DEPARTMENT

Reprints and journal articles to be abstracted should be sent to Dr. Lawrence T. Post, 520 Metropolitan Building, St. Louis, Mo. Only important papers will be used in this department, others of interest will be noticed in the Ophthalmic Year Book.

Licskó, A. Intracapsular Cataract Extraction. *Brit. Jour. Ophth.*, 1926, v. 10.

The author describes the operation as carried out by himself at the No. 1 Ophthalmological Hospital, Budapest. He uses a Schulek forceps with the teeth ground down, thus avoiding cutting the capsule. A section somewhat larger than one-third of the cornea is made, leaving a large conjunctival flap. Iridectomy is performed. The lens capsule is grasped with the forceps just above the equator and by lateral movements the zonula is ruptured and the lens drawn into the wound. At the same time pressure is exerted from below upwards along the lower border of the lens. During a period of two and a half years, the reporter dealt with 204 senile cataracts. Thirty per cent were successfully extracted in capsule. This has improved to fifty per cent during the past six months.

The low percentage may be taken to show that the operations were carried out with the utmost care, and that the lens capsule was ruptured in preference to running any risk of vitreous loss. It is due to this caution that in the whole series there was only one case of vitreous loss during the operation. This occurred on making the section in a case of complicated cataract. In two other cases, one of normal and the other of complicated cataract, the patient pressed the speculum on the eye at the end of the operation and caused vitreous loss. In the normal case vitreous loss was followed by iridochoroiditis, the only case of post-operative infection that occurred.

The great gain from the intracapsular operation is the clear vision obtained, at least 5/7 in cases with clear media and a healthy fundus.

D. F. H.

Thies, O. Late Infections After Two Normal Cataract Extractions. *Klin. M. f. Augenh.*, 1925, Nov.-Dec., p. 743.

Both cases presented on the 20th day after normal extraction, severe iritis with hypopyon and hyphema, apparently of endogenous origin. Forced milk injections in rapid succession cured the affections with preservation of the eyes and vision.

C. Z.

Mulock Houwer, A. W. Cavernous Angioma of the Choroid. *Klin. M. f. Augenh.*, 1925, Nov.-Dec., 75, p. 657.

Two cases in men, aged 35 and 29, are reported. The left eye of the first was enucleated. It showed a cavernous angioma of the choroid with cystic degeneration of the retina. Important in making the diagnosis clinically were the enormous dilation of the vessels around the tumor, the spotty gray color, the absence of inflammatory changes, the lack of permeability to light on transillumination, the age of the patient, the juxtapapillary origin and the degeneration of the macula which the author ascribes to disturbance of circulation.

C. Z.

Caspar, L. Coloboma of Iris and Choroid Upward. *Klin. M. f. Augenh.*, 1925, Nov.-Dec., 75, p. 707.

A man, aged 18, had at "11 o'clock," a typical coloboma of the right iris, occupying 1/6 of the pupillary margin and extending to the root of the iris, so that the smooth border of the normal lens could be seen. A corresponding large coloboma of the choroid reached from one disc diameter from the disc to the periphery, bluish white with grey crests, pervaded by irregular choroidal and scleral vessels, while the sharp pigmented borders were accompanied by retinal vessels. The author considered it a typical coloboma and assumed a development of the ocular cleft at an abnormal place

C. Z.

Wakizaka, K. Urogenital Inclusion Conjunctivitis and Trachoma. Nippon Gankakai Zasshi, 1922, May-June.

The author thinks that epithelial inclusions from the urogenital mucous membrane, morphologically entirely identical with those of inclusion conjunctivitis, occur for a brief period in the beginning stage of acute trachoma but soon disappear from the epithelium and appear subepithelial deep in the follicle. An inoculation of inclusions of urogenital origin upon a trachomatous conjunctiva increases the inflammatory condition. There are, therefore, two kinds of trachoma inclusions, those of conjunctival and those of urogenital origin. An inclusion conjunctivitis produces a positive reinoculation upon the urogenital mucous membrane used as the original source but trachoma inclusions will not do so. Among the cases diagnosed clinically as trachoma, there are cases of inclusion conjunctivitis to an amount of about 30 per cent. The latter have been transferred either from the urogenital mucous membrane to the eye or from eye to eye. Both diseases, inclusion conjunctivitis and trachoma, have the same period of incubation and the same inclusions. They are clinically different. The author is of the opinion that trachoma is a variable inclusion conjunctivitis really of urogenital origin, which has lost its original pathogenicity for its mother soil because of its adaptation to the conjunctiva.

S. M. and H. G. L.

Davenport, R. C. Glioma Retinae. Brit. Jour. Ophth. 1926, Sept., v. 10, pp. 474-478.

This report is really a continuation of the review in 1890 by Lawford and Collins from the year 1871, subsequently kept up by Marshall, Owen and finally Berrisford (Volume XX) bringing it to the year 1915. During the succeeding ten years there were 27 cases of glioma treated, bringing the total since 1871 to 163. All were proved microscopically; males 15; females 11. They were bilateral in 18.5 per cent; three were alive after ten

years; one after two and one-half years; one after seven years. This latter case occurred at aged two years. The right eye was removed in 1900. The child was well in 1905. The left eye was apparently normal. In 1913 following a series of "fits" the child went "blind." An opaque lens was removed. Later there was increased tension, finally the eye quieted after which vision was 6/60 with + 12 sph. in 1915. In 1918 following severe pain the eye was removed and sectioned revealing a glioma.

Of the 27 cases eight are known to be dead, twelve alive and seven unaccounted for. Seven are regarded as "cured" after several years. In no case was there any evidence of a familial tendency.

D. F. H.

Kuboki, Y. Experimental Phlyctenulae. Nippon Gankakai Zasshi, 1921, Nov.-Dec. 1922, Jan.-Apr.

Experiments with rabbits were carried out to determine the relation between phlyctenulae and tuberculosis and whether any external irritant might produce nontuberculous phlyctenulae. The author concludes both from clinical and animal observations that the close relation between phlyctenulae and tuberculosis was demonstrated. It was found, however, in rabbits that phlyctenulae did occur in the absence of tuberculosis in a few instances. The writer concludes that phlyctenulae develop most frequently upon a tubercular soil but are incited by an external irritation; of these irritations the most active in this regard is the staphylococcus and its toxin.

S. M. and H. G. L.

Handmann, U. Inversion in Cataract Extraction. Klin. M. f. Augenh., 1926, 76, p. 82.

A case of hypermature senile cataract in which an inversion of the iris occurred at operation is attributed to four factors: Deep anterior chamber, brittle zonula, atrophic iris with paralyzed sphincter and rapid advancement of the lens at delivery, whereby the atmospheric pressure forced the iris backward. After the operation eserin was applied. The outcome was good.

C. Z.

one-half
This lat-
vo years
in 1900.
The left
In 1913
the child
s was re-
increased
ed after
- 12 sph.
were pain
oned re-

nown to
ven un-
arded as
no case
familial
F. H.

Phlycte-
i, 1921,

re car-
on be-
culosis
rritant
phlyc-
s both
ations
phlyc-
emon-
er, in
cur in
a few
s that
ently
ncited
the irri-
egard
n.
L.

cata-
iris
d to
ber,
ara-
ment
at-
iris
erin
od.
.

Davenport, R. C. Corneoscleral Trephining for Glaucoma. Brit. Jour. Ophth., 1926, Sept. v. 10, pp. 478-484.

This is an analysis of 536 records investigated at Moorfields during the years 1919-1923. Four hundred five eyes trephined for primary glaucoma compose the series having records of value. Twenty cases improved after operation from less than 6/60 to better than 6/12. These probably were all cases of acute or subacute glaucoma, the poor visual acuity being due to circulatory interference and hazy media rather than nerve damage. The figures in the tables presented show that the visual acuity is not greatly altered for better or worse by the operation. Great improvement in visual acuity is not to be expected where nerve damage exists, but the fact that it is not lowered argues in support of its efficacy. The untoward immediate effects of the operation were vitreous loss in 7, loss of lens in 3, hemorrhage in 1, prolapsed iris in 2, detachment of choroid in 10. This last subsided quickly without visible disturbance. Remote disasters were late infection in 14 cases, poor drainage in a few. In some of these a second operation was successful. There was no evidence that trephine operation predisposes to cataract. In three or four cases in which lenses were extracted vision was poor following the operation.

D. F. H.

Bücklers, Max. Experiments with Ultrared Rays. Archiv f. Ophthalmol., 1926, Band 117, p. 1.

Six rabbits of 6 mos. old were exposed to ultrared rays for intervals varying between 20 minutes to 1 hour. Narcosis was obtained by the injection of somnifen (Roche) into the ear vein. After the raying, examination with the slit lamp revealed the changes in the eyes described by Vogt, Ginella and Muller. These changes were cloudiness in the aqueous humor, swelling of the iris with subsequent depigmentation and appearance of pigment in the aqueous humor, fine membranous exudate upon the anterior lens surface, weakness of the sphincter pupillae

muscle and later atrophy of the entire iris, subcapsular opacities in the anterior and posterior cortex of the lens.

After intervals of from 40 minutes to 6 days following the raying, the eyeballs were enucleated, fixed and sectioned. The cloudiness in the aqueous humor was found to be due to a fibrinous exudate. Hyperemia and exudation in the iris was accompanied by destruction of the pigment epithelium and of the superficial pigment cells, necrobiotic changes in the iris stroma and proliferation of pigment in the ciliary body. The capsule of the lens remained unaffected but the epithelium of the lens was extensively destroyed. Vacuoles occurred in place of the lens epithelium; there was also extensive destruction of the lens fibers with the formation of vacuoles. The retina showed wave like elevations and disintegration of the rod and cone layer; cystoid spaces appeared in the nerve fiber and nuclear layers. The pigment epithelium between choroid and retina showed loss of pigment in places. The characteristic choroidal changes were enormous hyperemia, edema, hemorrhages and exudates.

H. G. L.

Tewfik and Grgis. Exophthalmos from Dacryoadenitis. Bull. Ophth. Soc. of Egypt, 1925, p. 37.

A girl of 13 had suffered a severe ophthalmia for three weeks. The lids of the right eye were swollen and there was some chemosis, and an ulcer of the cornea due to the diplobacillus. There was proptosis almost directly forward, 1 cm. Movements of the eyeball were free in all directions. The left eye was normal. Treatment with silver nitrate and zinc sulphate lessened the inflammation, so that an iridectomy could be done for the prolapsed iris. In four weeks the exophthalmos had increased and a soft mass could be felt thru the skin of the upper lid in the region of the lacrimal gland. The movements of the eyeball were still free, except up and out. An incision was made below the superior margin of the orbit into the lacrimal fossa; and a part of the enlarged lacri-

mal gland was removed. It was found inflamed, without evidence of a new growth. The proptosis disappeared in ten days, and movements of the eyeball were free in all directions. E. J.

Krey, O. *Tuberculous Parenchymatous Keratitis and Lichen Scrofulosum.* Klin. M. f. Augenh., 1926, v. 76, p. 520.

A man aged 17, presented a sector of parenchymatous opacity of the left cornea. Wassermann negative. After injection of 0.001 old tuberculin there was general reaction, increased photophobia, ciliary injection and infiltration of almost the whole cornea; and on the fourth day eruption of lichen on the thorax, sacrum and arms. After a tuberculin cure vision was almost normal with remaining spots on the cornea without irritation. The author considers the occurrence of lichen after tuberculin injection as a proof of the tuberculous nature of the corneal affection.

C. Z.

Jess, A. *Chalcosis.* Klin. M. f. Augenh., 1926, v. 76, p. 465.

A man aged 32, who had been injured in 1917 by explosion of a hand grenade cap, presented typical chalcosis of the cornea, lens, and retina of the left eye. The zonula fibers were intensely green and their course on the anterior capsule could be especially well observed where they were all inserted in a small band of more intense impregnation with green carbonate of copper than the remaining capsule. This proved the existence of a zonular lamella. The author inclines to the assumption that the zonular lamella is a band encircling the equator and extending little beyond the insertion of the zonular fibers towards the poles of the lens.

C. Z.

Nakashima, M. *Pulsating Exophthalmus.* Nippon Gankakai Zasshi 1922, Jan.-March.

In a woman 63 years old, there suddenly occurred after a bath a spontaneously pulsating exophthalmus on the right side. The exophthalmus on this side was 27 mm. as against 19 mm. on the left side. There was present a

pulsating knot of dilated blood vessels just beneath the right eyebrow, pulsation of the right eyeball, a blowing noise in the right orbit, disturbances of the ocular muscles, bilateral paresis of the trigeminal nerves, diminution of vision, apathy and weakness of the extremities.

The patient died 64 hours after ligation of the right carotid and extirpation of the strongly dilated ophthalmic vein. Pathologically, there were found signs of a pneumonia. The dilated ophthalmic vein showed histologically immense thickenings of the elastic and muscle fibers as well as of the intima. On section there were found high grade sclerosis and syphilitic changes in the vessels over the entire body especially marked in the vessels at the base of the brain, marked dilation of the cavernous sinus and of the right orbital vein. In the anterior inner wall of the internal carotid, there was present a spherical perforating opening. Recent extensive softening of the right brain was present; the kidneys were shrunken.

The author cautions against operative interference in elderly individuals with extensive vascular changes.

S. M. and H. G. L.

Tewfik, M. *Cocain Potassium Sulphate Anesthesia.* Bull. Ophthal. Soc. of Egypt, 1925, p. 44.

For local anesthesia solutions containing cocaine and potassium sulphate were found superior to butyn in these respects. They can be used for surface and infiltration anesthesia, the risk of poisoning by cocaine seems to be negligible, they are less expensive than butyn. For lid operations the following is sufficient:

Cocain hydrochl.....	0.5
Adrenalin sol. 1 to 1,000.....	5.
Potassium sulphate sol. 2%.....	25.
Carbolic acid sol. 1/2%.....	100.

For operations on the eyeball the cocaine should be doubled, that is 1 per cent. A sufficient time must be allowed to get the best anesthetic effect. In the ophthalmic hospitals of Egypt, the cocaine potassium sulphate combination was preferred by three-fourths

vessels
w, pul-
olving
rbances
paresis
tion of
the ex-

er liga-
xtirpa-
halmic
e found
dilated
gically
tic and
ntima.
high
anges
dy es-
at the
ion of
right
r wall
pres-
ening.
right
were

pera-
duals

L.
Sul-
Soc.

con-
phate
these
sur-
the
s to
sive
the

.5

co-
per
al-
ect.
apt,
ibi-
ths

of the operators. The conclusion is reached that cocaine will still hold the field against butyn. E. J.

Wernicke, Otto. Sympathetic Ophthalmia. La Semana Medica, 1926, June 24.

The author believes that there is no definite explanation of the cause of sympathetic ophthalmia and that the problem does not differ from that of other double organs of the body. There seems no justification to make a special circumstance of the eyes. While from time to time authorities have described all kinds of sympathetic disease, varying from conjunctivitis, keratitis, iritis, and cataract, to those of the retina and optic nerve, yet all true cases reduce themselves to a low grade chronic uveitis. There has been no special organism definitely found to cause the condition. It seems to be produced by metastasis; the result of an infection in similar structure which does not affect the general circulation or the other organs as it is too little in amount, but on occasion thru the general system and circulation a spontaneous iridocyclitis from carrying of the infection to this organ. That in the body is too insignificant in amount to produce metastasis in other unlike structures. If there does not exist an enigma of sympathetic ophthalmia, it seems that the oculists have been victims of a special sympathetic theory. It is possible that other infections in the body, such as from the teeth, the tonsils, and the alimentary tract, may be the background for the origin of the infection in the so-called sympathizing eye. According to him, there is no treatment of any effect except early enucleation of the injured eye.

H. V. W.

Thiel, R. Effect of Gynergen (Ergotamin) Upon Intraocular Pressure. Klin. Woch. 1926, No. 20.

In a report relating to 40 cases, the author states that gynergen (active principle of ergot) possesses an elective affinity for the sympathetic portion of the vegetative nervous system. In glaucoma simplex an injection of 0.5 cc. subcutaneously will decrease

intraocular pressure several mm. Hg. within one hour. The decrease in one case was 46 mm. for the right and 30 mm. for the left eye. Lessened tension was also observed where pilocarpin and eserin proved futile. Gynergen was ineffective or its action was inadequate, in glaucoma absolutum and in secondary glaucoma. With the normal eye it caused a decrease in tension of 2 to 4 mm. The author, basing his conclusions upon his experience with gynergen, thinks that it is quite possible that excitation of the sympathetic plays an important role in the production of increased intraocular pressure in glaucomatous patients.

Mintschewa, M. Ocular Involvement in Recklinghausen's Disease. Klin. M. f. Augenh., 1926, 76, p. 403.

In a woman aged 23, an enlargement of the left eyeball with glaucoma was the first sign of a general neurofibromatosis noticed three months after birth. A short time afterwards elephantiasis of the lids and hypertrophy of the same side of the face became manifest. At puberty numerous typical neurofibromas of the skin of the trunk and limbs set in. The roentgen ray revealed an abnormal enlargement and flattening of the sella turcica.

Enlargement of the sella turcica in elephantiasis of the lids shows, according to Vogt, a certain constant relation. In general fibromatosis the hypophysis often shows changes. The enlargement of the sella turcica in a part of the cases is a consequence of asymmetry of the skull caused by Recklinghausen's disease. C. Z.

Houwer, A. W. Mulock. Orbital Tuberculosis. Nederl. Tijdschr. v. Gen. 1926, 1st p. No. 15, pp. 1516-24.

The author found in a 30 year old woman a small tumor at the temporal side of the right upper lid. It was mobile below the unchanged skin. It was just below and free from the orbital margin and also free from the tarsus, above which it was. The conjunctiva was normal. The tumor was elongated, round, knobby and resistant to touch. It was removed by blunt

dissection; directly afterward fat prolapsed forward; the tumor therefore had been situated in the fascia tarso-orbitalis or had adhered to it. No recurrence took place. After six years there were no symptoms of tuberculosis or lues and the blood picture was normal. Microscopically, the tumor consisted of epithelioid tubercles with giant cells separated by thick bands of connective tissue. Tubercle bacilli were not found.

The second patient was a 41 year old woman, who had had thickened lids for a few months. In the lids she felt small knobs. They felt on palpation like those in the first case. In both sides there was an oblong, smooth knob between orbital margin and tarsus, movable, at the left side, with a secondary small additional knob. The tumor was in close connection on both sides, with the tarsoorbital fascia. There was no recurrence. Transplantation in the anterior chamber of the rabbit did not produce tuberculosis. The chief mass is formed by an agglomeration of tubercle like foci separated by strands of connective tissue. Lymphocytes, different mast cells, a few eosinophils and plasma cells, are found in the connective strands, which are poor in vessels.

The author refers to Engelking's paper in the *Klin. Monatsbl.* Bd. 70, p. 100, and considers his cases a further progress, as there are visible further advanced organization and necrosis.

Boeck's miliarlupoid has a similar microscopic picture, however, still more similarity is found with a group of skin diseases, which go under the name of erythema induratum of Bazin and to which belongs the subcutaneous sarcoid of Darier-Roussy. With cutaneous conditions, small knobs are found in the subcutaneous tissue which are identical with the ones from the orbit.

After discussion of the literature and some cases, the author comes to the conclusion that an intimate relationship exists between the syndrome of Mikulicz, the socalled "lymphomatosis" of the orbit, the erythema induratum of Bazin, the miliarlupoid of

Boeck and some forms of chronic iridocyclitis. This relationship appears partly from the similarity of the pathologic anatomic pictures which these diseases show.

The pathologic anatomic picture does not make the diagnosis of tuberculosis certain, but suggests it. In all these diseases, often tuberculosis is diagnosed after tuberculin injection, experiments on animals or finding of the tubercle bacillus. It is, therefore, probable that these different affections belong to a group which has as a common characteristic, the particular reaction of the organism to the tubercle bacillus.

E. E. B.

Stock, W. Radiation Treatment in Ophthalmology. *Klin. M. f. Augenh.*, 1926, v. 76, p. 542.

Stock reports on his large experience with radiation. The quartz lamp has a very beneficial influence in scrofulosis by improving the general condition thru irritation of the skin. Roentgen rays are recommended in all tumors of the hypophysis and brain, carcinoma of the lids, and limbal papillomas and carcinomas. In tuberculosis, especially the granulating form, in which the infiltration with lymph cells is the chief anatomic feature, the treatment with roentgen rays gives good prospects. This experience with the experiments of Stock renders it probable that healing is produced by the influence on the lymphocytes and leucocytes. Nodular iritis and scleritis and sclerosing keratitis showed the best results. Stock warns against radiation of eyes that may carry the danger of sympathetic ophthalmia. The place for radiation is a well equipped roentgen institute, as it requires great skill not to render it harmful.

C. Z.

Jaensch, P. A. Fatty Degeneration of Anterior Segment of Eye. *Klin. M. f. Augenh.*, 1926, v. 76, p. 476.

A boy, aged 7, injured his right eye by a blow with a stick. Two weeks later a linear scar of the cornea, rupture of the sphincter and lens capsule, traumatic cataract and numerous posterior synechiae were found. Extraction of the cataract was done. After

chronic
hip ap-
y of the
which

picture
tuber-
it. In
losis is
jection,
ding of
erefore,
ections
a com-
ular re-
bercle
E. B.
ent in
genh.,

experi-
lamp
scro-
l con-
skin.
in all
brain,
papil-
eculo-
m, in
cells
reat-
good
the
prob-
be in-
uoco-
and
t re-
tion
er of
lace
ent-
kill
z.

ion
M.
-
eye
eks
up-
le,
os-
er

seven years there was discussion of the dense secondary cataract. A year later there was absolute glaucoma and painful inflammation. The lower two-thirds of the anterior chamber were filled with a yellowish brown mass and glistening cholesterol crystals. On enucleation the mass consisted of fat, cholesterol, histocytes and pigment. The blood had an increased content of cholesterol.

C. Z.

Ashikaga, M. Visual Fields in Pregnancy. Nippon Gankakai Zasshi, 1922, Feb.-Mar.

The writer measured the visual fields in 20 healthy pregnant women. Both eyes showed generally concentrically contracted fields but more markedly contracted in the temporal, up and temporal, and down and temporal directions; the same condition occurred with the fields for color. The contraction was greater in primipara than in multipara. The fundus frequently showed, at the end of pregnancy, a dilation of the larger veins of the retina; after delivery this dilation diminished.

The author believed these changes in the visual fields were due to the hypertrophied hypophysis in pregnancy producing a compression against the posterior half of the optic chiasm.

S. M. and H. G. L.

Duke-Elder, W. Stewart. Ocular Circulation. Brit. J. Ophth., 1925, Oct., v. 10, p. 513.

This is a very comprehensive monograph of some sixty pages dealing with the observation the author has made in his research work. Twelve pages of references accompany the contribution. It is summarized as follows:

(1) The methods which have been adopted in the estimation of the vascular pressures of the eye are detailed and criticised. It is shown that no one has yet succeeded in measuring the pressure in the intraocular arteries, that the technic employed hitherto in measuring the venous pressure has been inadequate in that it has involved in every case a wide departure from the normal conditions, and that no method has been suggested which can claim to have meas-

ured the normal pressure in the capillaries.

(2) The mechanism of the arterial and venous pulses in the eye is discussed: the arterial pulse is shown to be dependent upon the excursion of the pulse pressure, and upon the difference between the lowest point of this cyclic variation and the intraocular pressure. The venous pulse is dependent primarily on the arterial pulse, and in addition to the factor of pressure relations, its occurrence or nonoccurrence is influenced by other factors, being largely determined by the ease with which the blood finds an exit from the eye; any method of estimating the venous pressure from its occurrence is, therefore, fallacious.

(3) Experimental technic is described which has established the first measurements which have been made of the arterial pressure in the eye, and which has provided measurements of the venous pressure for which are claimed a closer approximation to the normal conditions than that involved by the methods employed hitherto.

(4) The mean pressure in the ophthalmic artery is not greatly below the mean aortic pressure (about 100 mm. Hg. in the cat).

The pressure in the retinal arteries is about 25% below that of the ophthalmic artery (75 mm. Hg. in the cat).

The pressure in the intraocular veins is in all circumstances greater than the intraocular pressure.

The pressure in the venous exits is normally slightly above the intraocular pressure (1.5 mm. Hg. in the dog).

There is a rapid fall of pressure as soon as the veins leave the eye; the pressure in the episcleral veins in the dog is about 7.2 mm. Hg. below the intraocular pressure.

(5) The venous pressure and the intraocular pressure vary together very intimately.

(6) Under conditions of raised intraocular pressure the pressure in the venous exits may fall below the chamber pressure.

(7) The nature of the capillary circulation is discussed, and the variability of its pressure pointed out. It is suggested that the capillary pressure in the

eye varies from about a few mm. Hg. above the intraocular pressure to a height of about 50 or 55 mm. Hg.

(8) It is shown that the vascular pressures and their relation to the intraocular pressure are compatible with the hypotheses of the formation of the aqueous by a process of dialysis from the blood, and do not necessitate the postulate of any "secretory" energy.

(9) The circulatory conditions lead to the expectation that the dialysation of the intraocular fluids would occur from the blood stream mainly, but not entirely, thru the vessels of the ciliary body and iris, and to the blood stream mainly, but not entirely, thru the canal of Schlemm.

(10) Inasmuch as the venous pressure in the eye is normally higher than the intraocular pressure, a hydrostatic outflow of the aqueous is impossible. Osmotic reabsorption into the blood stream is possible thruout the eye generally, but with its favorable position down the venous pressure gradient, and with its endothelial wall resembling that of a capillary, it is probable that a great part of the process takes place in the canal of Schlemm. Further, under conditions of raised intraocular pressure, the equilibrium is so altered that a hydrostatic outflow may occur here temporarily, the canal of Schlemm under these conditions acting as a safety valve mechanism to aid in the maintenance of the intraocular pressure at its normal level. D. F. H.

Van Heuven, J. A. Detachment of Retina. Klin. M. f. Augenh., 1926, v. 76, p. 340.

Colmatage is the thermo- or galvanocauterization of the sclera after dissection of the conjunctiva around the cornea devised by Lagrange. Van Heuven applied this on 15 eyes in 12 patients and gave the clinical histories with charts of the visual fields. There was improvement in 9 cases in which little or no improvement could be expected. Colmatage produces a constricting scar around the cornea at the site of the sinus. The intraocular pressure rises. This is the aim of the method. In no case did vision deteriorate. With exception of the old cases improvement of vision was at an average greater than with con-

servative treatment. Colmatage ought to be considered in the treatment of detachment of the retina.

C. Z.

Babonneix, L. and Mornet, J. Isolated Abducens Paralysis. Gaz. des Hôp., 1926, v. 99, p. 1381.

A girl of 11 years for two months had a paralysis of the right external rectus, the only symptom being diplopia. Altho the Wassermanns of her father and the patient were negative, the authors suspected heredosyphilis on account of frontal protruberances, peribuccal scars, coryza and enlarged nodes, especially the subclavicular, and because there was no history of trauma, diphtheria, etc.

C. L.

Mertz Weigandt. Sclerokeratitis. Klin. M. f. Augenh., 1926, v. 76, p. 412.

The left eye of a man aged 32, who had been affected with catarrh of the apices of the lungs, was struck by a piece of wood producing an episcleritic nodule and sclerosing keratitis considered tuberculous. After three weeks the right eye presented the same affection at a symmetric place. Wassermann and tuberculin tests were negative. In spite of this he was treated with new tuberculin and after about three months the affection was cured, with vision of 6/6. Analogous to the observation that contusion of a bone in a tuberculous individual may elicit tuberculous periostitis and caries, the author assumes the same pathogenesis for the sclera. The symmetric affection of the second eye can only be explained by conveyance of the irritation along the nerves.

C. Z.

Baruk and Dereux. Posttraumatic Visual Disturbance. Soc. Med. des Hôpitaux, 1926, Oct. 30. Abst. Gaz. des Hôp., 1926, v. 99, p. 1416.

The patient following an injury, had visual hallucinations, unilateral flashes of light, with right homonymous hemianopsia. He could not pronounce certain words which he read, altho he recognized them when someone spoke them. There was no trouble in speaking or writing.

C. L.

ought to
t of de-
C. Z.
J. Iso-
Gaz. des
nths had
1 rectus,
. Altho
and the
ors sus-
ount of
l scars,
ially the
was no
c.
C. L.
eratitis.
p. 412.
2, who
of the
by a
cleritic
consider-
eks the
tion at
n and
n spite
tuber-
ns the
f 6/6.
con-
indis-
ostitis
same
sym-
e can
f the
Z.
natic
des
des
had
shes
ian-
tain
cog-
em.
or

Heine, L. **Action of Glass on Light Sense.** *Klin. M. f. Augenh.*, 1926, Jan. v. 76, p. 37, ill.

Ten clinical histories are given, which seemed to prove that there is an isolated disturbance of the light sense which shows itself by an increase of the adaptive excitation threshold and often causes only general nervous distress of asthenopic or migrainous character. It may be cured by euphos glasses within from a few days to several weeks, more rarely months.

The ultrared caloric rays affect mostly the refracting media, altho an effect of the ultraviolet rays cannot be denied. These, however, exert their influence on the retina, optic nerve and subcortical ganglia by chemical transformations in the retina. Since euphos glasses show a striking improvement effect on adaptation, it is most probable that the ultraviolet rays damage the light sense.

C. Z.

Dieterici, C. **Absorption Properties of Glass.** *Klin. M. f. Augenh.*, 1926, Jan. v. 76, p. 45.

The author ascertained that in ultrared the lighter euphos glass showed a fairly constant absorption of about 30%, the darker 60%. In the visible spectrum, the euphos glass diminishes almost equally the luminosity of all colors without changing noticeably the tone.

In ultraviolet the glasses show a marked selective absorption, which converts the incident ultraviolet light in the first strata of glass into greenish fluorescent light and reflects the converted light towards the side of incidence. Therefore, an eye behind these glasses is protected from violet light.

C. Z.

Bariety. **Ophthalmic Zona with Disassociated Oculosympathetic Syndrome.** *Soc. Méd. des Hôp.*, 1926, Nov. 5. *Abst. Gaz. des Hôp.* 1926, v. 99, p. 1467.

A young woman had a left sided ophthalmic zona which was followed

by exophthalmos, and narrowing of the palpebral orifice without myosis.

C. L.

Putnam, T. J. **Geniculostriate System.** *Arch. Neurol. and Psychiat.* 1926, Dec., v. 16, p. 683.

This is the fourth in a series of studies on the central visual system. It is based chiefly on a case in which lesions of the geniculostriate system were found at autopsy. Conclusions are drawn from the degeneration changes. Excellent drawings in three dimensions, which give an unusually clear idea of the composition of this tract, are an interesting feature of the article.

The conclusions are that the proportionate area devoted to central vision seems to be about the same in optic nerve tract, corpus geniculatum, inferior longitudinal fasciculus and striate cortex. The macula appears to be represented in a wedge shaped area, with its apex anterior, in the striate cortex. This area extends not less than two and not more than three centimeters anterior to the occipital pole in the specimen studied. In the fasciculus longitudinalis inferior, the macular fibers lie chiefly in the central third, but overlap the upper and lower quadrant fibers above and below and mingle with them at the edges of the radiation. Projection fibers proceeding from homologous points in the two retinas are farthest apart at the corpus geniculatum, and gradually approach one another as they draw near the cortex. Further evidence is given of the "bayonet" course of fibers between the radiation and the cortex.

L. T. P.

Haden, H. C. **Tonometric Measurements.** *Texas State Jour. of Med.*, 1926, Sept.

The author urges the use of the tonometer in all routine eye examinations and cites five cases in which this proved of value in detecting increased intraocular tension which otherwise would have escaped notice. Bibliography on the tonometer is appended. L. T. P.

NEWS ITEMS

Personals and items of interest should be sent to Dr. Melville Black, 424 Metropolitan Building, Denver, Colorado. They should be sent in by the 25th of the month. The following gentlemen have consented to supply news from their respective sections: Dr. H. Alexander Brown, San Francisco; Dr. Wm. Thornwall Davis, Washington; Dr. Gaylord C. Hall, Louisville, Ky.; Dr. J. W. Kimberlin, Kansas City, Mo.; Dr. George H. Kress, Los Angeles; Dr. Edward D. LeCompte, Salt Lake City; Dr. W. H. Lowell, Boston; Dr. G. Oram Ring, Philadelphia; Dr. Charles P. Small, Chicago; Dr. G. McD. VanPoole, Honolulu.

SOCIETIES.

The Indiana Academy of Ophthalmology and Oto-Laryngology gave its annual dinner at Indianapolis, January twelfth. Dr. Burton W. Eagan, Logansport, was elected president for 1927.

At the Annual meeting of the Chicago Ophthalmological Society the following officers were elected for the ensuing year: Dr. Robert H. Buck, president; Dr. Oscar Cleff, vice-president; Dr. Charles G. Darling, secretary-treasurer; Dr. Clarence Loeb, corresponding secretary; Dr. Frederick Vreeland, councillor. Dr. William Holland Wilmer addressed the society on the establishment and aims of the new Wilmer Institute of Ophthalmology at Johns Hopkins Hospital, Baltimore. He was elected an honorary member of the Society.

The Hispano-American Ophthalmological Society held its fourteenth meeting at Salamanca September seventeenth to twentieth. A pathetic paper was that of Dr. Mérida Nicolich on "Traumatic Pulsatile Exophthalmos with Neuroparalytic Keratitis." The author was describing his own case. In another paper by the same author on "Medicosocial Aspects of Blindness in Spain" he said there were 36,000 blind people in Spain. He compared Spain's inactivity about doing anything for the blind people with that of other countries. Its next biennial meeting will be held in Barcelona, September 1928.

At the January meeting of the Ophthalmic Section of the College of Physicians of Philadelphia, the following program was given: Dr. H. Maxwell Langdon, "A Case of Unusually Wide Distribution of Medullated Nerve Fibers"; Drs. C. E. G. Shannon and George H. Cross, "Cicatrical Ectropion. Plastic Reconstruction of the Lids of both Eyes by Epithelial Outlay. Exhibition of Case"; and Dr. John H. Stokes, "The Principles of Sphylotherapy as Applied to the Eye." Dr. Stokes, who is Professor of Dermatology at the University of Pennsylvania Medical School, presented a most scholarly paper. Its discussion was opened by Dr. George E. de Schweinitz and continued by Dr. J. F. Schamberg, and by Dr. John A. Kolmer.

The Puget Sound Academy of Ophthalmology and Oto-Laryngology held its annual meeting at the Rainier Club, Seattle, January 18, 1927. The retiring President, Dr. Frank E. Chase, gave a dinner to the members present. Dr. Chase reviewed the work of the Academy for the past year, then introduced Dr. Arthur Burns and Dr. N. D. Pontius who have recently returned from extensive travel

and studies in Europe. Dr. A. O. Loe, President of the Public Health League, gave a short talk, as did Dr. E. C. Wheeler of Tacoma. Five men were elected to membership; and Dr. George Swift was unanimously elected an honorary member. Officers for the ensuing year were elected as follows: President, Dr. Harry V. Wurdemann, Seattle; Vice-Presidents, Drs. E. E. Maxey, Aberdeen, and C. W. Shannon, Seattle; Secretary-Treasurer, Dr. M. J. Morris, Seattle. Dr. Wurdemann upon taking the President's Chair brought forth the influence the Academy has for the good of its members, both scientifically and for fellowship. It is his desire to have more clinical cases presented during the present year, feeling that more can be learned from these than from scientific papers.

PERSONALS.

Dr. Ervin Torok has been elected president of the American-Hungarian Medical Association.

Dr. Joseph Imre, Jr., professor of ophthalmology at the University of Pécs (formerly Fünfkirchen), Hungary, recently addressed the American-Hungarian Medical Association at the New York Academy of Medicine, on "Eye Symptoms and Eye Disturbances Caused by Endocrine Disturbances."

Dr. Harvey J. Howard, after sixteen years residence in China, doing undergraduate and graduate teaching of ophthalmology; and nine years service as head of the department, in the Peking Union Medical College, has resigned his position in that institution; and after his trip via Suez and a few weeks travel in Europe expects to return to take up his residence somewhere in the United States. Since the strenuous experience which furnished the basis for his book, "Ten Weeks With Chinese Bandits," and after undergoing a major operation, he has fully regained his health.

MISCELLANEOUS.

A bill has been presented for passage in the House of Commons to provide blind licenses for broadcasting receiving apparatus.

In response to a request from the Commissioner of Health of Chicago, the Chicago Ophthalmological Society appointed a committee of five of its ex-presidents to formulate its views regarding mydriatics or cycloplegics in children. The Committee reported as follows:

"In conformity with the motion from the Chicago Ophthalmological Society, your committee begs leave to submit the following unanimous report, regarding the necessity of

using a mydriatic or cycloplegic, in the examination of the eyes of school children suffering from visual defects.

A mydriatic or cycloplegic is absolutely necessary in examining the eyes of school children suffering from visual defects. The dilatation of the pupil permits a complete inspection of the interior of the eye, and frequently a cause of poor vision can be ascertained that would be impossible in the undilated pupil. Diseases of the eye that are progressive in nature are so discovered, and immediate treatment in such cases can be instituted for the protection of vision. Some general disease or infection may manifest itself, at an early stage, in the interior of the eye, and its early recognition may prove of vital importance to the child.

Only by putting the focusing or accommodating power of the eye at rest, temporarily with a cycloplegic, can the proper glasses for children be determined; and by this method alone can a scientifically correct lens be prescribed.

The use of atropin or its derivatives is not only absolutely without danger to the child's eyes, but under intelligent supervision its use has proven of untold benefit in preventing blindness.

The committee desires to express its appreciation to the Chicago Commissioner of Health, Dr. Bundesen, for the opportunity of replying to the inquiry regarding the use of mydriatics, and heartily agrees with his Department as to the necessity for the careful examination of the eyes of school children."

Current Literature

These are the titles of papers bearing on ophthalmology. They are given in English, some modified to indicate more clearly their subjects. They are grouped under appropriate heads, and in each group arranged alphabetically, usually by the author's name in *heavy-faced type*. The abbreviations mean: (Ill.) illustrated; (Pl.) plates; (Col. Pl.) colored plates. Abst. shows it is an abstract of the original article. (Bibl.) means bibliography and (Dis.) discussion published with a paper.

BOOKS.

Bussy, L. Les consultations journalières, Ophtalmologie (Elementary) Paris, O. Doin. Ann. d'Ocul. 1926, v. 163, p. 959.

Duverger and Veiter. Therapeutique chirurgicale Ophtalmologique. 45 ill. 40 col. pl. Paris: Masson et Cie, 1926, A. J. O., 1927, v. 10, p. 68.

Linder, K. Die Bestimmung des Astigmatismus durch die Schattenprobe mit Cylinder-glassen. 116 p., 83 ill. Cloth 8vo. Berlin: S. Karger, 1927, A. J. O., 1927, v. 10, p. 68.

Lipmann. Unfallursachen und Unfallbekämpfung. Berlin 1925. R. Schoetz. Zeit. f. Augenh., 1927, v. 61, p. 125.

Lythgoe, R. J. Report of Committee upon Physiology of Vision. Privy Council Medical Research. 77 p. 1926. London. H. M. Stationery Office. Brit. Jour. Ophth. 1927, v. 11, p. 44.

Meller, J., and Hirsch, O. Rhinogene Neu-ritis retrobulbaris. 64 p. 2 col. pl. Paper 8vo. Berlin. S. Karger, 1926. A. J. O., 1927, v. 10, p. 69.

Ortiz, P. M. Report of Commissioner of Health of Porto Rico. 184 p. 8vo. ill. San Juan Bureau of Printing, 1926. A. J. O., 1927, v. 10, p. 72.

Rosenberg, A. Berliner Fortbildungskurs für Augenärzte. Paper 235 p. 23 ill. 8vo. Berlin S. Karger, 1926. A. J. O., 1927, v. 10, p. 70.

Salus, R. Kompendium der Augenheilkunde. Wien, 1926. J. Springer. Zeit. f. Augenh., 1926, v. 60, p. 388.

Schiff-Wertheimer, S. Les syndromes hemianopsies dans le ramollissement cérébral. 160 p. 38 ill. 2 col. pl. O. Doin. Arch. d'Ophth. 1926, v. 43, p. 746.

Shastid, T. H. Our Own and Our Cousins' Eyes. 32 p. Cloth. Amer. Opt. Co., 1926. A. J. O., 1927, v. 10, p. 70.

Transactions College of Physicians of Philadelphia, v. 47, 1926, Cloth. A. J. O., 1927, v. 10, p. 71.

DIAGNOSIS.

Fergus, F. Recording of perimetric tracings. Brit. Med. Jour., Jan. 8, 1927, pp. 52-53.

Pascal, J. I. The photoscope (1 ill.) A. J. O., 1927, v. 10, p. 48.

Ruszkowski, J. Self injury to eye and simulation of blindness. Klin. M. f. Augenh., 1926, v. 77, p. 857.

THERAPEUTICS.

Accardi, V. Influence of pituitary extract on ocular pressure and size of pupil. Klin. M. f. Augenh., 1926, v. 77, p. 862.

Augstein. Vaccine of Ponndorf in ocular therapy. Zeit. f. Augenh., 1927, v. 61, p. 110.

Bargy, M. New salt of silver in ocular therapeutics. Clin. Ophth. 1926, v. 30, pp. 688-692.

Bailliart and Caratte. Changes in normal eye produced by nasal applications. Ann. d'Ocul. 1926, v. 163, pp. 922-927.

Lane, L. A. Radium in ophthalmology. Jour. A. M. A., 1927, v. 88, p. 232-239.

Lewin, L. Action of arsenic on eye. Klin. M. f. Augenh., 1926, v. 77, p. 890.

Linn, J. G. Use of dionin. Atlantic Med. Jour. 1927, v. 30, p. 221.

Madan, K. E. Effects of prolonged applications of cold to eye. Lancet, 1927, Jan. 1, p. 18.

Passow, A. Eye symptoms with internal administration of mydriatics affecting the parasympathetic nervous system. Arch. f. Augenh., 1926, v. 97, pp. 432-459.

Seefelder, R. Undesirable effects of novof orm salve treatment about the eyes. Wien. klin. Woch., 1927, v. 40, p. 23.

Stieren, E. Intensive use of dionin in ophthalmology. Atlantic Med. Jour. 1927, v. 30, p. 220.

Torok, E. Spectral rays and the eye. Jour. Ophth., Otol., and Laryngol., 1927, pp. 1-17.

Zabel, W. Warm applications to eye. Arch. f. Augenh., 1926, v. 97, pp. 599-602.

OPERATIONS.

Miron-Eliasberg. Sagittal limbal iridotomy in operations on anterior segment of eye. (1 ill.) Arch. d'Ophth. 1926, v. 43, pp. 719-723.

Pavia, J. L. Plastic prothesis in extensive symblepharon. (6 ill.) Arch. de Oft. de Buenos Aires, 1926, v. 2, pp. 123-128.

Van Lint. Palpebral akinesis. Arch. d'Ophth. 1926, v. 43, p. 714-718.

REFRACTION.

Chavez-Velando, L. A. Causative relation of keratoconus to myopia. Cronica Méd. 1926, v. 43, pp. 265-270. Abst. Jour. A. M. A., 1927, v. 88, p. 282.

Edwards, J. F. Psychology of refraction. California and Western Med. 1927, Jan. p. 53-55.

Hastertine, B. Modern eyeglasses. (5 ill.) Clin. Med. and Surg. 1927, v. 34, pp. 24-28.

Hessberg. Müller's contact glasses for keratoconus. Zeit. f. Augenh., 1927, v. 61, p. 118.

Krämer. Model for skiascopy. Klin. M. f. Augenh., 1926, p. 77, p. 851.

Lindner, K. Subjective measurement of astigmatism. (3 ill.) Zeit. f. Augenh., 1926, v. 60, p. 346-360.

Luedde, W. H. Mechanism of accommodation. (8 ill. Bibl.) Amer. Jour. Ophth. 1927, v. 10, pp. 15-32 and p. 55.

Southall, J. P. C. Investigation of form of so-called punctal lenses. *Jour. Optical Soc. of Amer.* v. 13, 1926, Dec.

OCULAR MOVEMENTS.

Banister, J. M. Extreme degrees of strabismus. Results of operation. *Nebraska State Med. Jour.* 1927, v. 12, p. 26.

Bartels, M. Equilibrium and disturbances of equilibrium. *Zeit. f. Augenh.* 1926, v. 60, pp. 361-364.

Bettremieux. Tenotomy of deviating eye. *Clin. Ophth.* 1926, v. 30, p. 693.

Cords, R. Theory of optical nystagmus. *Klin. M. f. Augenh.* 1927, v. 77, pp. 781-787.

Cross, A. B. Correction of esotropia with glasses. *New Orleans Med. and Surg. Jour.* 1927, v. 79, pp. 590-593.

Diaz-Caneja. Stereoscopic vision. (14 ill. Bibl.) *Arch. de Oft. Hisp.-Amer.* 1927, v. 27, pp. 1-79.

Ellett, E. C. Convergent squint. *Amer. Jour. Ophth.* 1927, v. 10, p. 61.

Ocular paralysis. *Amer. Jour. Ophth.* 1927, v. 10, p. 61.

Fecht. Recurring oculomotor paralysis. *Zeit. f. Augenh.* 1927, v. 61, pp. 114-116.

Geis. Paralysis of horizontal eye movements. *Klin. M. f. Augenh.* 1926, v. 77, p. 846.

Hess, W. R. Experimental dynamics of eye muscles. (3 ill.) *Arch. f. Augenh.* 1926, v. 97, pp. 460-466.

Hofe, K. v. Divergence paralysis. *Zeit. f. Augenh.* 1927, v. 61, pp. 54-62.

Jackson, E. Fusion training. *Amer. Jour. Ophth.* 1927, v. 10, p. 67.

Jamieson, P. C. Method and principles of muscle recession in correction of squint. *Amer. Jour. Ophth.* 1927, v. 10, p. 58.

Millar, G. M. Nystagmus in infant. *Brit. Med. Jour.* 1927, Jan. 1, p. 14.

Oltmans, G. Jr. Paralysis of ocular movements and ptosis. *Klin. M. f. Augenh.* 1926, v. 77, p. 879.

Ulrich, Question of squint. *Zeit. f. Augenh.* 1927, v. 61, p. 107.

Wolfe, O. Late fusion development in strabismus. (2 ill.) *Amer. Jour. Ophth.* 1927, v. 10, pp. 51-53.

THE CONJUNCTIVA.

Alvis, B. Y. and Wiener, M. Treatment of trachoma by intramuscular injections of mercury. *Amer. Jour. Ophth.* 1927, v. 10, pp. 33-35.

Bahn, C. A. Swimming bath conjunctivitis. *New Orleans Med. and Surg. Jour.* 1927, v. 79, pp. 586-590.

Dillon, M. L. Parinaud's conjunctivitis. *West Virginia Med. Jour.* 1926, v. 22, p. 587.

Duverger, C. Extirpation of pterygium and buccal graft. (4 ill.) *Arch. d'Opht.* 1926, v. 43, pp. 705-708.

Eischnig, A. Bacterioscopy of normal conjunctival sac. *Klin. M. f. Augenh. Beilageh.* 1926, v. 77, pp. 22-28.

Feig, J. Parinaud's conjunctivitis. *Klin. M. f. Augenh.* 1926, v. 77, p. 864.

Friede, R. Improvement of vision in albinotic eyes in gold staining of conjunctiva. *Klin. M. f. Augenh. Beilageh.* 1926, v. 77, pp. 113-122.

Harman, N. B. Some common eye diseases. *The Practitioner*, 1927, v. 118.

Kreiker, A. Gold chlorid coloring of tarsal conjunctiva in albinism. *Beilageh. Klin. M. f. Augenh.* 1926, v. 77, pp. 109-112.

Mayou, M. S. Shrinking of conjunctiva. *Amer. Jour. Ophth.* 1927, v. 10, p. 63.

Möwisch. Trachoma like conjunctivitis in leucemia. *Klin. M. f. Augenh.* 1926, v. 77, p. 849.

Schoninger, L. Pterygium. (5 ill. Bibl.) *Klin. M. f. Augenh.* 1926, v. 77, pp. 805-813.

Stella, P. Pathologic anatomy of pterygium. *Klin. M. f. Augenh.* 1927, v. 77, p. 864.

Urbanek, J. Light dermatitis and conjunctivitis. *Zeit. f. Augenh.* 1927, v. 61, pp. 66-69.

Vancea, P. Forms of streptococcal conjunctivitis. *Arch. d'Opht.* 1926, v. 43, pp. 724-731.

THE CORNEA AND SCLERA.

Asmus, E. Tattooing of cornea after Knapp. *Klin. M. f. Augenh.* 1926, v. 77, p. 832.

Fischer, F. P. Experimental studies on sclera. (3 ill.) *Arch. f. Augenh.* 1926, v. 97, pp. 467-492.

Friede, R. Migration of gold precipitate in corneal staining after Knapp. *Klin. M. f. Augenh. Beilageh.* 1926, v. 77, pp. 123-128.

Fuchs, A. Proliferation of corneal endothelium. (9 ill.) *Zeit. f. Augenh.* 1927, v. 61, pp. 1-25.

Giuseppe, T. di. Pathogenesis of hypopon keratitis. *Klin. M. f. Augenh.* 1926, v. 77, p. 866.

Grüner, E. Parenchymatous keratitis after salvarsan treatment of parents. *Arch. f. Augenh.* 1926, v. 97, pp. 591-598.

Handmann. Sensibility of posterior surface of cornea. *Klin. M. f. Augenh.* 1926, v. 77, p. 839.

Hessberg. Blue scleras and brittle bones. *Klin. M. f. Augenh.* 1926, v. 77, p. 844. Corneal scars. *Zeit. f. Augenh.* 1927, v. 61, p. 116.

Holth, S. Technic of tattooing of cornea. *Norsk Mag. for Laegevidensk.* v. 88, 1927, pp. 1-17.

Jarmersted. Serpent ulcer of cornea. *Zeit. f. Augenh.* 1927, v. 61, p. 112.

Jasinska, M. Operation for keratoconus. *Klin. M. f. Augenh.* 1926, v. 77, p. 866.

Jilek, J. v. Staining of cornea with gold chlorid. *Klin. M. f. Augenh.* 1926, v. 77, pp. 833-836.

Kuborn, P. Treatment of parenchymatous keratitis and hereditary lues. *Klin. M. f. Augenh.* 1926, v. 77, p. 843.

Löhlein, W. Research regarding keratitis. (8 ill.) *Arch. f. Augenh.* 1926, v. 97, pp. 401-431.

Lurig, K. Immunization of cornea. *Mona-tsch. f. Kinderkellk.* 1926, v. 33, p. 391. *Abst. Jour. A. M. A.* 1927, v. 88, p. 286.

Mackenzie, G. W. Interstitial keratitis of dental origin. *Med. Jour. and Rec.* Jan. 1927, pp. 85-88.

Meyer-Waldeck, F. Acquired syphilis, trauma and parenchymatous keratitis. *Klin. M. f. Augenh.* 1926, v. 77, p. 839.

Neame, H. Interstitial keratitis. *Amer. Jour. Ophth.* 1927, v. 10, p. 64.

Rohrschneider. Primary fatty degeneration of cornea. *Klin. M. f. Augenh.* 1926, v. 77, p. 849.

Rosenstein, A. M. Corneal tattooing with gold chlorid. (6 ill.) *Beilageh.* *Klin. M. f. Augenh.* 1926, v. 77, pp. 103-118.

Safar, K. Pathogenesis of pyocyanous infection of cornea. *Zeit. f. Augenh.* v. 61, 1927, pp. 25-46.

Steindorff. Action of ethylchlorid on animals' corneas. *Klin. M. f. Augenh.* 1926, v. 77, p. 847.

Suganuma, S. Tuberculous sclerokeratitis and its relation to phlyctenular disease. (1 ill.) *Klin. M. f. Augenh.* 1926, v. 77, pp. 787-791.

ANTERIOR CHAMBER AND PUPIL.

Adlersberg and Kauders. Secretions of stomach and width of pupil. *Klin. Woch.* 1927, v. 6, p. 23.

Krause-Wichmann. Secretions of stomach and pupil width. *Klin. Woch.* 1927, v. 6, p. 22.

Santamaria, A. Oscillation of pupils after light reflex. *Policlin.* 1926, v. 33, pp. 1453-1456.

THE UVEAL TRACT.

Agan, W. B. Diabetic iritis. *Amer. Jour. Ophth.* 1927, v. 10, p. 62.

Augstein. Hole formation in iris from atrophy. *Zeit. f. Augenh.* 1927, v. 61, p. 111.

Balado, M. Peripheral nerve paths of pupil in man. (2 ill.) *Arch. de Oft. de Buenos Aires*, 1927, v. 2, pp. 192-196.

Parodi, L. Tuberculous iritis. *Arch. de Oft. de Buenos Aires*, 1926, v. 2, pp. 129-136.

Petrovie, J. Anatomy and therapy of solitary tubercle of choroid. (7 ill. bibl.) *Klin. M. f. Augenh.* 1926, v. 77, pp. 791-805.

SYMPATHETIC DISEASE.

Jacquet, P. and Bariety. Ophthalmic herpes and sympathetic syndrome of eye. *Bull. de la Soc. Méd. des Hôp.* 1926, v. 50, p. 1561. *Abst. Jour. A. M. A.* 1927, v. 88, p. 207.

Marchesani, O. Subtilis infection of one eye with disease of the other. (4 ill.) *Arch. f. Augenh.* 1926, v. 97, pp. 559-574.

Relation of herpes virus to sympathetic ophthalmia. (Bibl.) *Arch. f. Augenh.* 1926, v. 97, pp. 575-590.

GLAUCOMA.

Heesch, K. Pressure relations in eye. (6 ill. 9 graphs. Bibl.) *Arch. f. Augenh.* 1926, v. 97, pp. 546-558.

Hoffmann. Adrenalin treatment of glaucoma. *Zeit. f. Augenh.* 1927, v. 61, p. 109.

Löhlein, W. Pressure curves in glaucomatous eye; diagnosis, prognosis and therapy. *Klin. M. f. Augenh.* 1926, v. 77, pp. 1-22. *Beilageh.*

Magitot and Balliat. Organic nervous system of eye. *Ann. d'Ocul.* 1926, 163, pp. 927-940.

Mauksch. Operation for glaucoma. *Klin. M. f. Augenh.* 1926, v. 77, p. 852.

Raum, C. Lance knife for glaucoma iridectomy. *Klin. M. f. Augenh.* 1926, v. 77, p. 838.

Samojloff. Reactive hypertonus of eyes. *Klin. M. f. Augenh.* 1926, v. 77, p. 896.

Sugasawa, N. Changes of intraocular pressure with important hereditary defects of eyes. (5 curves). *Klin. M. f. Augenh.* 1926, v. 77, pp. 775-781.

Thiel, R. Influences of ergotamin on ocular pressure in glaucoma. (8 curves. Bibl.) *Klin. M. f. Augenh.* 1926, v. 77, pp. 754-775.

Ulrich. Treatment of glaucoma. *Zeit. f. Augenh.* 1927, v. 61, p. 110.

THE CRYSTALLINE LENS.

Blaskovics, L. v. Operation for luxation of lens. *Klin. M. f. Augenh.* 1926, v. 77, p. 853.

Cotin, L. Operation for cataract as instituted by Albert Sarraut. *Clin. Ophth.* 1926, v. 30, pp. 686-688.

Coulard, E. and Rochon-Duvigneaud. Thyroid cataract in rabbit. *Soc. d'Ophth. de Paris*, 1926, Nov. pp. 629-633.

Fecht. Familial luxation of lens. *Klin. M. f. Augenh.* 1926, v. 77, p. 842.

Jackson, E. Parathyroids and tetany cataract. *Amer. Jour. Ophth.* 1927, v. 10, p. 66.

Moore, R. F. Corneal section in cataract extraction. *Brit. Jour. Ophth.* 1927, v. 11, p. 10.

Szily, v. Pathogenesis of posterior lenticonus. *Klin. M. f. Augenh.* 1926, v. 77, p. 845.

Wilson, D. Ectopia lentis. *Amer. Jour. Ophth.* 1927, v. 10, p. 64.

THE VITREOUS HUMOR.

Heesch, K. Ultramicroscopic study of vitreous in-animals' eyes. (9 ill.) *Arch. f. Augenh.* 1926, v. 97, pp. 534-544.

Mathewson, G. H. Cases of asteroid hyalitis. *Amer. Jour. Ophth.* 1927, v. 10, p. 53.

Vormann. Cysticercus in vitreous. *Klin. M. f. Augenh.* 1926, v. 97, p. 847.

THE RETINA.

Heine, L. Anatomy of macula in inflammation. (2 pl. 2 ill.) *Arch. f. Augenh.* 1926, v. 97, pp. 502-513.

Kyrieleis, W. Origin of retinal hemorrhage and purpuric and septic disease. (Bibl.) *Arch. f. Augenh.* 1926, v. 97, pp. 514-533.

Lindquist, A. L. Retinitis proliferans. *Amer. Jour. Ophth.* 1927, v. 10, p. 62.

Luque, E. Clinical value of hemeralopia. *Arch. de Oft. de Buenos Aires*, 1927, v. 2, pp. 155-161.

Marzio, Q. di. Retinitis associated with hyper- and hypoglycemia. *Policlinico*, 1926, v. 33, pp. 1778-1782.

Mayou, M. S. Detachment of retina. Amer. Jour. Ophth., 1927, v. 10, p. 63.

Menacho, M. Retinitis of vascular origin. (2 ill.) Arch. de Oft. Hisp.-Amer., 1927, v. 27, pp. 79-84.

Schall, E. Socalled varicose nerve fibers of retina. Zeit. f. Augenhe., 1927, v. 61, pp. 51-53.

Thompson, H. Electric retinitis. Amer. Jour. Ophth., 1927, v. 10, p. 63.

Tiscornia, A. Hereditary and family macular choroiditis. (4 col. pl.) Arch. de Oft. de Buenos Aires, 1926, v. 2, pp. 102-115.

Von der Heydt, R. Interpretation of retinal folds. (1 ill.) Amer. Jour. Ophth., 1927, v. 10, pp. 12-14.

THE OPTIC NERVE.

Beauvieux, J. Pseudooptic atrophy in new born. (6 ill. 1 col. pl. Bibl.) Ann. d'Ocul., 1926, v. 163, pp. 881-921.

Charlin, C., and Santiago Barrenechea, A. Papilledema in eclampsia and cerebral tumors. (1 ill.) Arch. de Oft. de Buenos Aires, 1926, v. 2, pp. 98-101.

Fischer-Ascher, M. Lues and tabetic optic nerve atrophy. Med. Klin., 1926, v. 22, pp. 1991-1993.

Gottlieb, M. J. Rhinologic findings and treatment of retrobulbar optic neuritis. New York State Jour. Med., 1926, v. 26, pp. 1011-1015.

Halbertsma, K. I. A. Crater like hole and coloboma of disc with changes in macula. (1 col. pl. 1 ill. bibl.) Brit. Jour. Ophth., 1927, v. 11, pp. 11-16.

Hessberg. Malaria treatment of tabes with optic atrophy. Klin. M. f. Augenhe., 1926, v. 77, p. 843.

Kropp, Leber's familial optic atrophy. Klin. M. f. Augenhe., 1926, v. 77, p. 842.

Nonay, T. Neuritis, optic atrophy and hypotony thru luetic hypophysis tumor. Klin. M. f. Augenhe., 1926, v. 77, pp. 821-825.

Salzmann, M. Malformation of optic nerve entrance. Wien. kl. Woch., 1927, v. 40, pp. 20-22.

Taylor, H. K. Roentgen findings of optic canals in blindness due to nasal accessory sinus disease. New York State Jour. Med., 1926, v. 26, pp. 1015-1017.

THE VISUAL TRACTS AND CENTERS.

Abromowicz, I. Bitemporal contraction of visual field in pregnancy. (Bibl.) Brit. Jour. Ophth., 1927, v. 11, pp. 17-27.

Baruk and Dereux. Hallucination and visual verbal amnesia. Ann. d'Ocul. 1926, v. 163, p. 958.

McCready, E. B. Word deafness and word blindness in education and behavior of children. Amer. Jour. Psychiat. 1926, v. 6, pp. 267-279.

Marcus, J. H. Oxycephaly: Report of case. Med. Jour. and Rec., 1927, Feb. pp. 192-194.

COLOR VISION.

Crocco, A., and Adrogue, E. Color perception in soldiers in Argentina. Arch. de Oft. de Buenos Aires, 1926, v. 2, pp. 116-122.

Engelking, E. Spectral distribution of differential sensibility for hues of color in anomalous trichromates. (4 ill.) Klin. M. f. Augenhe., Beilage, 1926, v. 77, pp. 61-75.

Tscherning, M., and Larsen, H. Anomalies of color vision. Jour. de Physiol. et de Path. Gén., 1926, v. 24, pp. 475-492.

THE EYEBALL.

Kemler, J. I. Ivory implant after enucleation. (Bibl.) Amer. Jour. Ophth., 1927, v. 10, pp. 9-11.

Loss, E. Temporary prosthesis. Zeit. f. Augenhe., 1927, v. 61, p. 71.

Zimmermann, S. Cartilage implantation after enucleation. Zeit. f. Augenhe. 1927, v. 61, pp. 63-65.

THE LACRIMAL APPARATUS.

Dean, F. W. Dacryocystitis. Amer. Jour. Ophth., 1927, v. 10, p. 63.

Ohm, J. Toti's operation. Klin. M. f. Augenhe., 1926, v. 77, pp. 825-832.

DISEASES OF THE LIDS.

Handmann. Spontaneous involution of xanthelasma. Klin. M. f. Augenhe., v. 77, 1926, p. 838.

Howe, T. G. Poliosis of eyebrow and lashes with unilateral atrophic retinitis. U. S. Veterans' Bureau Med. Bull., 1926, v. 2, p. 1177.

Macklin, M. T. Hereditary abnormalities of eyelids. Canadian Med. Assn. Jl., 1927, v. 17, pp. 55-60.

Pick. Septic thrombophlebitis after hordeolum. Zeit. f. Augenhe., 1927, v. 61, p. 108.

DISEASES OF THE ORBIT.

Bartels, M. Implantation of fat after operation on orbit. Zeit. f. Augenhe. 1927, v. 61, pp. 118-120.

Colleville. Pansinusitis with orbital complications. Clin. Ophth., 1926, v. 30, p. 707.

Gerard, G. Orbital complications in sinus disease. Clin. Ophth., 1926, v. 30, pp. 673-683.

Hessberg. Lues of orbit. Klin. M. f. Augenhe., 1926, v. 77, p. 844.

Tilley, J. H. Mechanism of production of exophthalmos. Ann. of Surg., 1926, v. 84, pp. 647-651.

Welti, H. Ligature of thyroid artery in exophthalmic goiter. Presse Méd., Jan. 3, 1927, v. 19-26.

INJURIES.

Amberger. Evulsion of optic nerve. Zeit. f. Augenhe., 1927, v. 6, p. 120.

Cunningham, J. F. Evulsion of optic nerve. Amer. Jour. Ophth., 1927, v. 10, p. 64.

Dean, F. W. Penetrating injury. Amer. Jour. Ophth., 1927, v. 10, p. 62.

Fejer, J. Foreign body in retina. Klin. M. f. Augenhe., 1926, v. 77, p. 853.

Gerard, G. The eye in sport. Clin. Ophth., 1926, v. 30, pp. 683-686.

Gray, J. B. Foreign bodies in eye. Southwestern Med., 1927, v. 11, pp. 13-16.

Horay, G. Cilia in anterior chamber. Klin. M. f. Augenhe., 1926, v. 77, p. 853.

Jung, J. Sideroscopy. Klin. M. f. Augenhe., 1926, v. 77, p. 838.

Maxwell, J. T. Corneal injury. Amer. Jour. Ophth., 1927, v. 10, p. 62.

Paderstein. Siderotic cataract. Klin. M. f. Augenh., 1926, v. 77, p. 848.

Pflugbeil. Retinal rupture from fall. Klin. M. f. Augenh., 1926, v. 77, p. 847.

Stroschein. Removal of glass splinter from anterior chamber. Klin. M. f. Augenh., 1926, v. 77, p. 847.

Thies, O. Luxation of eyeball by motor injury. Klin. M. f. Augenh., 1926, v. 77, pp. 836-838.

Wright, R. E. Simple method of dealing with destructive lesions of lids. Indian Med. Gaz., Jan., 1927, p. 12.

TUMORS.

Doherty, W. B. Melanosis oculi with microscopic findings. (1 col. pl. 9 ill. Bibl.) Amer. Jour. Ophth., 1927, v. 10, pp. 1-9.

Ellett, E. C. Sebaceous cyst of orbit. Amer. Jour. Ophth., 1927, v. 10, p. 61.

Hine, M. L. Tumor of lid. Amer. Jour. Ophth., 1927, v. 10, p. 63.

Hoffmann. Plasmoma of conjunctiva. Zeit. f. Augenh., 1927, v. 17, p. 112.

Lewis, P. M. Osteoma of orbit. Amer. Jour. Ophth., 1927, v. 10, p. 60.

Pavia, J. L., and Dusseldorf, M. Cylindroma of lid. (3 ill.) Arch. de Oft. de Buenos Aires, 1927, v. 2, pp. 171-176.

Schwartz, F. O. Melanosarcoma of choroid, sympathetic ophthalmia and retrobulbar neuritis. (2 ill.) Amer. Jour. Ophth., 1927, v. 10, pp. 35-43.

Stuelp. Orbital tumor. Zeit. f. Augenh., 1927, v. 61, pp. 120-122.

Velhagen, K. Jr. Glioma and anterior chamber. (4 ill.) Klin. M. f. Augenh., Beilageh., 1926, v. 77, pp. 76-102.

COMPARATIVE OPHTHALMOLOGY.

Mouquet, A. Causes of certain ocular lesions in carnivorous animals. Soc. d'Oph. de Paris, 1926, Nov., pp. 619-629.

GENERAL PATHOLOGY.

Lindner, K. Parasitology of eyes (Micro-organisms). Zeit. f. Augenh., 1926, v. 59, pp. 364-377.

Rohrschneider. Deposition of cholesterol in eyes. Klin. M. f. Augenh., 1926, v. 77, p. 348.

GENERAL AND EXTRAOCULAR DISEASES.

Augstein. Swelling in conjunctiva with foot and mouth disease. Zeit. f. Augenh., 1927, v. 61, p. 108.

Barnert, C. Ophthalmic findings in nasal accessory sinus disease. New York State Jour. Med., 1926, v. 26, pp. 1017-1022.

Behr, C. Metalues and the eye. Zeit. f. Augenh., 1926, v. 60, pp. 319-334.

Gradle, H. S. Ocular conditions in diabetes. Amer. Jour. Ophth., 1927, v. 10, p. 54.

Hessberg. Hemianopsia in encephalitis lethargica. Zeit. f. Augenh., 1927, v. 61, pp. 116-118.

Jaensch, P. A. Late ocular symptoms in epidemic encephalitis. (Bibl.) Klin. M. f. Augenh., 1926, v. 77, pp. 813-821.

Meissner, W. Specific treatment of ocular tuberculosis. Klin. M. f. Augenh., 1926, v. 77, p. 882.

Nonne, M. Metalues and visual organs. Zeit. f. Augenh., 1926, v. 60, pp. 335-345.

Post, L. T. Gangrene in ophthalmology. Amer. Jour. Ophth., 1927, v. 10, p. 50.

Satanowsky, P. Treatment of ocular tuberculosis with tuberculin. (1 ill.) Arch. de Oft. de Buenos Aires, 1927, v. 2, pp. 177-191.

Stiel. Pharyngeal tonsils and the eye. Zeit. f. Augenh., 1927, v. 61, p. 70.

Terrien, F., and Veil, P. Convergence and disturbances of pupil motility in epidemic encephalitis. Arch. d'Ophth., 1926, v. 43, pp. 709-713.

VISUAL HYGIENE AND PROPHYLAXIS.

Barbieri, A. Prophylaxis of trachoma in Argentina. Arch. de Oft. de Buenos Aires, 1927, v. 2, pp. 164-170.

Cords, R. Social hygiene and the eye. Zeit. f. Augenh., 1927, v. 61, p. 126.

Moore, S. P. Illinois safeguards eyesight of school children. Nation's Health, 1927, v. 9, p. 43.

Skowroski. Printing from standpoint of ocular hygiene. Klin. M. f. Augenh., 1926, v. 77, p. 893.

OPHTHALMIC SOCIOLOGY.

Beaumont, W. M. Visual standards for motor drivers. Brit. Med. Jour. Dec. 25, 1926, p. 1243.

Brons, C. Extension of industrial insurance to eye diseases due to industries. (Bibl.) Klin. M. f. Augenh. Beilageh., 1926, v. 77, pp. 29-60; and p. 840.

Demaria, E. B. Impressions from travel in Palestine and Egypt. Arch. de Oft. de Buenos Aires, 1926, v. 2, pp. 8-97.

Hessberg, R. Wearing glasses for labor. Zeit. f. Augenh., 1927, v. 61, pp. 47-51.

Lindermann, K. Blindness from fumes after dynamite explosion. (2 ill.) Zeit. f. Augenh., 1927, v. 61, pp. 72-79.

Ophthalmic benefits under insurance acts. Brit. Jour. Ophth., 1927, v. 11, p. 27.

Welfare of blnd. Brit. Jour. Ophth., 1927, v. 11, p. 28.

EDUCATION, HISTORY AND INSTITUTIONS.

Lloyd, R. I. European methods. Amer. Jour. Ophth., 1927, v. 10, p. 62.

Clarke, E. Advances in ophthalmology. Amer. Jour. Ophth., 1927, v. 10, p. 64.

Jackson, E. Graduate study. Amer. Jour. Ophth., 1927, v. 10, p. 68.

James, R. R. British master of ophthalmology; John Scott. (3 ill.) Brit. Jour. Ophth., 1927, v. 11, pp. 1-10.

Harry H. Stark. Southwestern Med., 1927, v. 11, p. 37.

Stegman, L. V. Observations made in Government Ophthalmic Hospital, Madras, India. Amer. Jour. Ophth., 1927, v. 10, pp. 44-48.

Sudhof, K. Table of eye diseases of Leonhard Fuchs, 1538. Arch. f. Augenh., 1926, v. 97, pp. 493-501.